

DATA PROCESSING AND DISPLAY OF
LASER DOPPLER EXPERIMENTAL RESULTS

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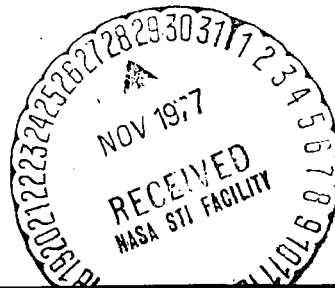
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V, R, A Display Option 21-1	522
V, R, A Display Option 21-2	523
Vmax, R, A Display Option 22-1	524
Vmax, R, A Display Option 22-2	525
V X Imax, R, A Display Option 31-1	526
V X Imax, R, A Display Option 31-2	527

Scan #22, Day 238, Run #4:

Imax, R, A Display Option 11-1	528
Imax, R, A Display Option 11-2	529
I, R, A Display at Velocity Cell 62 Option 12-1	530
Frame 15383 to 15401	531
Frame 15383 to 15401	532
V, R, A Display Option 21-1	533
V, R, A Display Option 21-2	534
Vmax, R, A Display Option 22-1	535
Vmax, R, A Display Option 22-2	536
V X Imax, R, A Display Option 31-1	537
V X Imax, R, A Display Option 31-2	538

Scan #23, Day 238, Run #4:

Imax, R, A Display Option 11-1	539
Imax, R, A Display Option 11-2	540
I, R, A Display at Velocity Cell 62 Option 12-1	541

Scan #23, Day 238, Run #4:

Frame 16312 to 16331	542
Frame 16312 to 16331	543
V, R, A Display Option 21-1	544
V, R, A Display Option 21-2	545
Vmax, R, A Display Option 22-1	546
Vmax, R, A Display Option 22-2	547
V X Imax, R, A Display Option 31-1	548
V X Imax, R, A Display Option 31-2	549

Scan #24, Day 238, Run #4:

Imax, R, A Display Option 11-1	550
Imax, R, A Display Option 11-2	551
I, R, A Display at Velocity Cell 62 Option 12-1	552
Frame 16604 to 16622	553
Frame 16604 to 16622	554
V, R, A Display Option 21-1	555
V, R, A Display Option 21-2	556
Vmax, R, A Display Option 22-1	557
Vmax, R, A Display Option 22-2	558
V X Imax, R, A Display Option 31-1	559
V X Imax, R, A Display Option 31-2	560

Scan #25, Day 238, Run #4:

Imax, R, A Display Option 11-1	561
Imax, R, A Display Option 11-2	562
I, R, A Display at Velocity Cell 62 Option 12-1.	563
Frame 17570 to 17588	564
Frame 17570 to 17588	565

Scan #25, Day 238, Run #4:

V, R, A Display Option 21-1	566
V, R, A Display Option 21-2	567
Vmax, R, A Display Option 22-1	568
Vmax, R, A Display Option 22-2	569
V X Imax, R, A Display Option 31-1	570
V X Imax, R, A Display Option 31-2	571

Scan #26, Day 238, Run #4:

Imax, R, A Display Option 11-1	572
Imax, R, A Display Option 11-2	573
I, R, A Display at Velocity Cell 62 Option 12-1	574
Frame 17825 to 17843	575
Frame 17825 to 17843	576
V, R, A Display Option 21-1	577
V, R, A Display Option 21-2	578
Vmax, R, A Display Option 22-1	579
Vmax, R, A Display Option 22-2	580
V X Imax, R, A Display Option 31-1	581
V X Imax, R, A Display Option 31-2	582

Scan #27, Day 238, Run #4:

Imax, R, A Display Option 11-1	583
Imax, R, A Display Option 11-2	584
I, R, A Display at Velocity Cell 62 Option 12-1	585
Frame 18327 to 18345	586
Frame 18327 to 18345	587
V, R, A Display Option 21-1	588
V, R, A Display Option 21-2	589

Scan #27, Day 238, Run #4:

Vmax, R, A Display Option 22-1	590
Vmax, R, A Display Option 22-2	591
V X Imax, R, A Display Option 31-1	592
V X Imax, R, A Display Option 31-2	593

Scan #28, Day 238, Run #4:

Imax, R, A Display Option 11-1	594
Imax, R, A Display Option 11-2	595
I, R, A Display at Velocity Cell 62 Option 12-1	596
Frame 19046 to 19064	597
Frame 19046 to 19064	598
V, R, A Display Option 21-1	599
V, R, A Display Option 21-2	600
Vmax, R, A Display Option 22-1	601
Vmax, R, A Display Option 22-2	602
V X Imax, R, A Display Option 31-1	603
V X Imax, R, A Display Option 31-2	604

Scan #29, Day 238, Run #4:

Imax, R, A Display Option 11-1	605
Imax, R, A Display Option 11-2	606
I, R, A Display at Velocity Cell 62 Option 12-1	607
Frame 19902 to 19920	608
Frame 19902 to 19920	609
V, R, A Display Option 21-1	610
V, R, A Display Option 21-2	611
Vmax, R, A Display Option 22-1	612
Vmax, R, A Display Option 22-2	613

Scan #29, Day 238, Run #4:

V X Imax, R, A Display Option 31-1	614
V X Imax, R, A Display Option 31-2	615

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Introduction

This document is the final report for contract NAS8-31771. The contract was awarded to the University of Arkansas at Fayetteville by George C. Marshall Space Flight Center, Marshall Space Flight Center, Alabama. The prime objective of the contract was to perform data processing and graphical display of Laser-Doppler Dust Devil experimental data collected by MSFC in Arizona in August, 1975.

This report assumes familiarity with NASA Report No. FAA-RD-74-213, Development of a Laser Doppler System for the Detection, Tracking, and Measurement of Aircraft Wake Vortices. The NASA report covers the theory of Doppler systems, signal processing, and data processing display.

A summary of the research activities conducted for the Dust Devil contract is given in Figure 1. The remainder of this report contains a description of the software that was developed to process and display the Dust Devil data. The program listings are included in the appendix of this volume; the graphical displays are included in a separate volume.

Software Development

The University of Arkansas research team selected an interactive approach to analyze and display the dust

Figure 1. Summary of Contract Activities

1976	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan and Program Conversion Program									
Attend Raytheon Presentation									
Plan and Develop 3-D Software									
Debug and Test Conversion Program with NASA Data									
Develop Dust Devil Location Program									
Develop Frame Display Software for Tektronix 4015									
Edit NASA Tapes									
Test 3-D Software Display Packages									
Plan and Develop 2-D Software Display									
Test 2-D Software									
Interface Interactive Software in a Single System									
Demonstration of Software for J. Bilbro's On-Site Visit									
Final Contract Production Runs									
Final Contract Report and Presentation									

dust devil data. One of the prime reasons for selection of this approach is the programs are intended to be used as production programs and executed many times. The software was not developed for a single run using the batch mode of operation.

Since the developed software is a research tool, the interactive nature of these programs allows the user to make qualitative decisions in a real-time mode of operation. Thus, the turnaround overhead inherent in batch operations is avoided by the interactive approach. In addition, since the analysis is repetitive and essentially open-ended, the developed software allows the user access to all the dust devil data. Hence, it is not necessary to resort to the use of "representative" or "average" data, although the user may do so if he desires.

The developed software is of a modular format which is common to interactive systems and allows for expansion and refinement of the system. The system was designed so such modification to the system can be accomplished with minimum effort.

Dust Devil Data

MSFC provided the University of Arkansas research team with fifty-eight 800-bpi tapes containing the dust devil data to be displayed and analyzed. These tapes contain approximately 200 million bytes of information collected using the laser doppler system.

These data were edited; defective data, bad tapes, and duplications were eliminated from the data set. Thirty-seven runs of the dust devil data were found usable, representing 559 full scans which include the minimum-maximum angle or the maximum-minimum angle. These 559 full scans include 261,178 frames. Table 1 summarizes the usable data.

Conversion Software

Each dust devil data tape contains a header record followed by a frame data record for each frame. The header record consists of the run scan characteristics and the starting clock time of the run. The frame data record contains the frame number, the S, Y positional information in Cartesian coordinates, R the radius of scan field, and T the scan angle. In addition, the clock time and 104 values representing the amplitudes of the return signal for the 104 velocity cells are recorded.

Because the word length on these machines is 32 bits, and the word length on the dust devil data tapes is 36 bits, the data as provided were not directly acceptable to the IBM 360 and IBM 370 digital computers. This conversion difficulty was overcome by the development on the University of Arkansas 370/155 of an assembly language usable on other IBM 360-370 machines.

TABLE 1
SUMMARY OF USABLE DUST DEVIL DATA

Day	Run	Section	Scans	Frames
234	9	1	16	4970
234	14	1	21	6539
234	14	2	5	1562
234	17	1	3	951
235	4	1	35	10879
235	5	1	25	7774
235	5	2	4	1246
235	5	3	3	928
235	11	1	35	10875
235	23	1	31	9629
236	6	1	37	11501
236	6	2	9	2782
236	6	3	4	1252
236	7	1	53	16525
236	17	1	30	18685
236	17	2	4	2479
236	17	3	5	3113
236	17	4	7	4358
237	6	1	3	1871
237	6	2	2	1229
237	6	3	1	604
237	6	4	4	2501
237	6	5	1	620
237	9	1	9	5577
237	12	1	27	16812
238	2	1	23	14336
238	3	1	29	18050
238	4	1	6	3722
238	4	2	23	14327

TABLE 1 continued

Day	Run	Section	Scans	Frames
238	5	1	1	1380
238	6	1	9	5600
238	6	2	21	13056
238	7	1	17	10572
238	8	1	12	7453
238	9	1	16	9947
238	10	1	17	10603
238	11	1	11	6870

When called for the first time, this routine reads the header record and stores the fraction bits of the initial clock time for later use. The first call and all succeeding calls then reads a frame record. The integer items (frame number and the 104 amplitudes) are easily converted to 36 bits by eliminating the high-order 4 bits which are always zero for these data. The fraction bits of the saved initial clock time are subtracted from the fraction bits of the frame clock time to yield an integral number of clockticks which is returned to the calling program. This leaves the 4 floating-point items X, Y, R, T, which are handled identically.

The 36-bit floating-point representation uses one sign bit, 8 exponent bits, and 27 fraction bits. The exponent is kept in excess 128 notation and indicates the number of bits the assumed radix point must be moved to obtain the actual floating-point number. The 32-bit floating-point representation uses one sign bit, 7 exponent bits, and 24 fraction bits. The exponent is carried in excess 64 notation and indicates the number of hexadecimal digits (4 bit groups) the assumed radix point must be moved to obtain the actual floating-point number.

Since all quantities are positive, the sign bit is always zero and presents no problems. The input exponent bits, minus 128, are first increased if necessary to the next higher multiple of 4, and after adding 64, become the output exponent bits. In order to maintain the correct

radix point position, the input exponent bits are shifted right if necessary by the amount of the increase. The 24 left-most input fraction bits, perhaps modified by the right shift, are then joined to the output exponent bits. The 25th input fraction bit is then tested, and if it is a one bit, one is added to the output fraction bits. This accomplishes rounding and completes the conversion for floating-point numbers.

Active Area Locator Program

The volume of the dust devil data is quite large, and the probability that data from a given frame is useful for analysis and display purposes is remote. These two conditions precipitated the need for software that can yield information concerning the frames that are most likely to yield desired data. Such a software package was developed and is referred to as the active area locator program.

The fundamental assumption underlying the active area locator program is that the passage of a dust devil through a given area represents a disturbance to the prevailing environmental velocity distribution for that area. This disturbance will be characterized by relatively high amplitude signals from velocity cells which would otherwise signal weakly or not at all. That is, over time there should be a greater than normal variation in signal amplitudes for areas that experience dust devil passage. The velocity cells

experiencing this higher variation should indicate the characteristic velocities for the dust devil passage.

After initialization, input cards describing the scans for a run are read, and the permanent display screen coordinates for the location grid used by the active area display are calculated. The first display identifies the run and allows the user to set the size of the working grid which will be imposed upon the laser scan field. The grid width is expressed in whole degrees (1° - 90°), and the grid length is expressed in whole meters (1 - 99). The user also sets the percentage of observed variations to be ignored during processing (1% - 99%). This determines the selectivity of the locator program, and also influences the running time.

The next phase of processing involves the use of the conversion program to read from either one or two raw data tapes those frames belonging to the scans selected by the input cards. A composite grid location value is calculated using the radius and angle values from the frame and the grid width and length values given by the user. Each frame lying within a given grid is assigned the coordinates of the near left-hand corner of that grid as viewed from the van. An output routine is used to write each frame with the grid value added, onto a disc data set. This output data set is sorted using the calculated grid value as the primary sort field, and the frame number as the secondary sort

field. The resultant sorted data set consists of frames in chronological order for each grid in the laser scanning field.

The next phase of processing involves reading the sorted data set and calculating for each grid value the observed amplitude variation for each of the 104 velocity cells. A frequency count is maintained for each velocity cell which gives the number of times a given amplitude variation was observed. After the sorted data set has been read, the amplitude variation corresponding to the user-selected cutoff point is determined for each velocity cell. The sorted data set is then read again, and an array is prepared which gives the velocity cell and the grid value for each instance of a cutoff point being exceeded. An array containing the total amount by which the cutoff point is exceeded is also prepared for each velocity cell.

A display is then presented which has the velocity cells along the horizontal axis and the total amount by which a cutoff point for a velocity cell is exceeded along the vertical axis. This display indicates the velocities which can be considered most active in the sense of larger variations in signal amplitudes over time. A hard copy of this display is usually made for future reference.

The user then has the option of: (1) terminating the program, (2) selecting another velocity cell, (3) changing the grid size and/or rejection percentage, or (4) proceeding to the 3-dimensional display routines. If option

(4) is chosen, the user defines the boundaries of the region to be displayed (minimum and maximum radius and angle). Control is then passed to the 3-dimensional display routines. When control is returned, the user is again presented with these four options. The subroutines used by the active area locator program are provided in the appendix.

Three-Dimensional Display Programs

The 3-dimensional software is interfaced with the active area locator program by subroutine MENU. The programs are invoked only after a region containing significant amplitude variations is identified in the laser scanning field. This technique eliminates the detailed analysis of insignificant data and increases the efficiency of the analysis procedure.

Subroutine MENU offers three options to the user: (1) return to the active area locator program, (2) process a full scan of data with subroutine DISPLY, or (3) process a particular angular region with subroutine RAY. After return from DISPLY or RAY, subroutine MENU cycles, again offering options (1), (2), and (3) to the user.

Subroutine DISPLY operates at the scan level. The first screen display presents the user with several options. Other than the option allowing for return to subroutine MENU, these options determine the quantity to be associated with the vertical axis in a 3-dimensional display. The base quantities are always radius and angle,

thus displaying the selected quantity as a function of position. The selectable quantities are: (1) maximum amplitude across all velocity cells, (2) amplitude at the velocity cell chosen in the active area locator program, (3) the velocity cell associated with maximum amplitude, (4) maximum velocity cell with amplitude above a threshold, and (5) the product of (1) and (3).

If option (4) is selected, the user may enter an amplitude threshold. For all display options, the required quantities are calculated by processing the frames associated with a given scan. A uniform position grid is imposed upon the laser scanning field, and the desired 3-dimensional graph is plotted by calling subroutine THREED.

Subroutine DISPLY then cycles, allowing the user to choose various options before returning to subroutine MENU. An additional option available after the first pass through DISPLY is a call to subroutine RAY. It is unnecessary to reprocess the data frames since all quantities are calculated during the first pass.

Subroutine RAY is used to display a graph of amplitude over a base of velocity and radius, with the input data coming from a particular ray of the laser scan. As such, this is a very detailed analysis and is normally undertaken only for angles which show promise of exhibiting dust devil passage.

Subroutine RAY is cyclic in nature and works within the angular bounds established by the active area locator program. The user has the option of returning to the calling program, processing the entire angular region, or specifying a smaller angular region which includes a single angle as a special case. Before each ray display is presented, the user is given the option of bypassing the 3-dimensional graph. After a given angular region has been processed, the RAY subroutine cycles, allowing the user to select another range of angles. The THREED subroutine is used for the 3-dimensional display itself.

Subroutine THREED is an interface routine connecting the display routines to the 3-dimensional surface plotting package developed by Dr. D. L. Beveridge at City University of New York. The primary function of THREED is to establish the viewpoint coordinates for displaying the surface, and to define the other constants required by the CUNy package. The subroutines used by the 3-dimensional display programs are listed in the appendix of this report.

APPENDIX I
OPERATION EXAMPLES

The following pages contain Tektronix hardcopies taken during a session with the Active Area Locator Program. This session was followed immediately by a session with the 3-Dimensional Display Programs. The hardcopies for that latter session are in the back section of this appendix.

Hardcopies 1, 2, and 3 show the input parameters being supplied to the Active Area Locator Program in the order of grid width, grid length, and cutoff percentage, and Hardcopy 4 shows results from the first phase of processing. The velocity cells lie along the horizontal axis, and the vertical axis indicates the amount by which the 90% point was exceeded by the observations surviving the cut.

Hardcopies 5, 6, and 7 indicate a change in the cutoff point from 90% to 95%, while Hardcopies 8 and 9 show a change in grid dimensions to 1 degree by 2 meters. Hardcopy 10 shows a request to examine velocity cell 61, with Hardcopy 11 being the result. This display indicates the most extreme 5% of the observations for velocity cell 61, by location, on a polar grid.

Hardcopy 12 indicates how the user requests another velocity cell display, and Hardcopy 13, 14, and 15 are displays for velocity cells 62, 47, and 50 respectively.

Hardcopy 16 indicates a request to change input parameters, with Hardcopy 17 showing the cutoff point increased to 98%. Hardcopies 18 through 22 show the differences in the displays resulting from this input parameter change.

Hardcopies 23 and 24 are preparatory to entering the 3-Dimensional Display Programs and indicate the region to be analyzed.

RAY 238 RUN 04 TAPE 06110 AND 29226
ENTER GRID WIDTH IN WHOLE DEGREES, ONE DIGIT: 5

DAY 238 RUN 04 TAPE 06110 AND 29226
ENTER GRID WIDTH IN WHOLE DEGREES, ONE DIGIT: 5
ENTER GRID LENGTH IN WHOLE METERS, TWO DIGITS: 10

ORIGINAL PAGE IS
OF POOR QUALITY

PAV 238 RUN 04 TAPE 06110 AND 29226

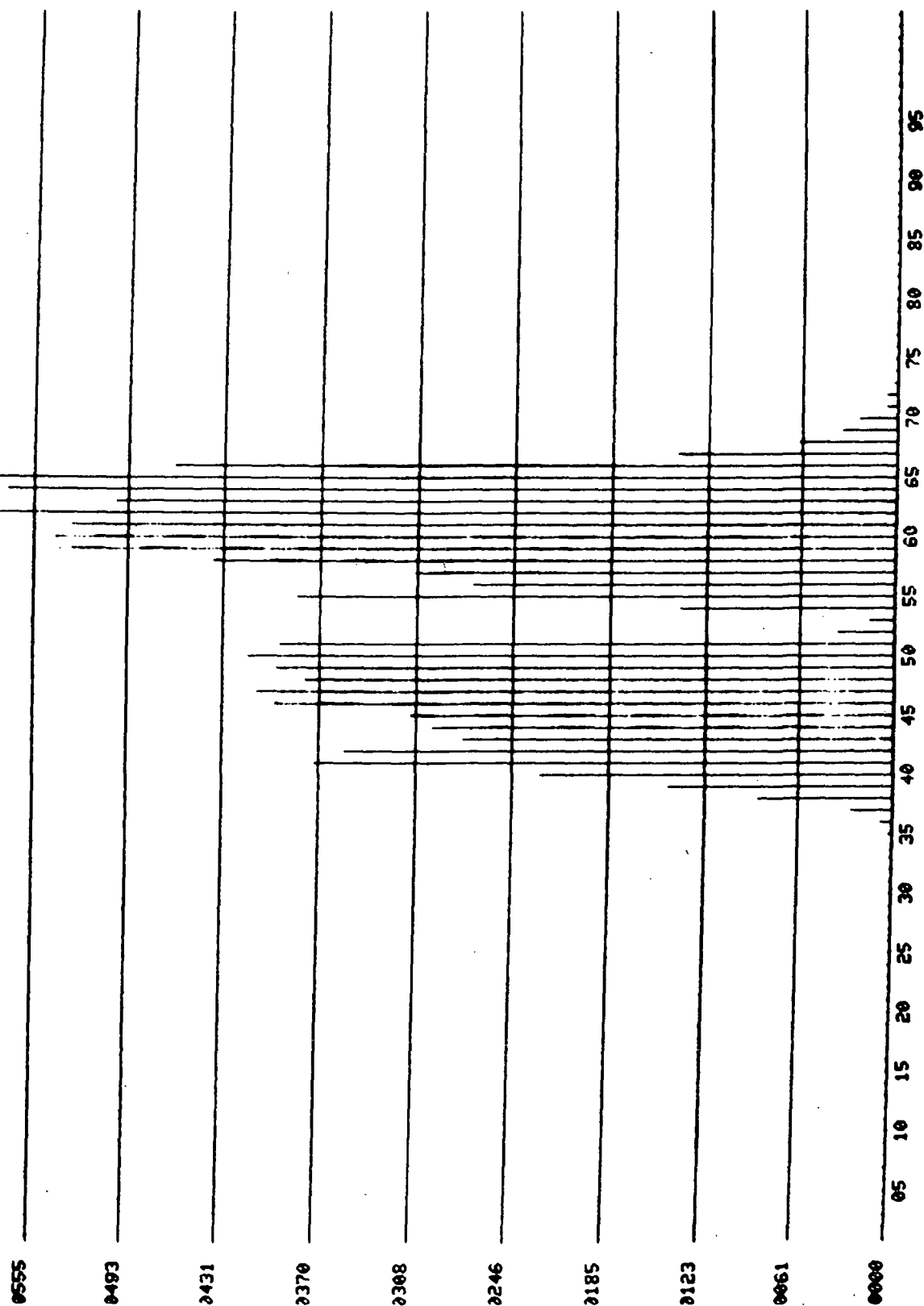
ENTER GRID WIDTH IN WHOLE DEGREES, ONE DIGIT: 5

ENTER GRID LENGTH IN WHOLE METERS, TWO DIGITS: 10

ENTER PERCENT OF OBSERVED VARIATIONS TO BE IGNORED, TWO DIGITS: 90

VELOCITY CELLS AND AMOUNTS OVER 90% POINT
 DAY 238 RUN 04 TAPE 06110 AND 29226

GRID WIDTH 05 DEGREES GRID LENGTH 10 METERS
 RECORD CELLS OF INTEREST AND ENTER 'D'



Hardcopy 4

ENTER 3 DIGIT CELL NUMBER OR 'S' TO STOP OR 'G' TO CYCLE: 6

DAY 238 RUN 04 TAPE 06110 AND 29226

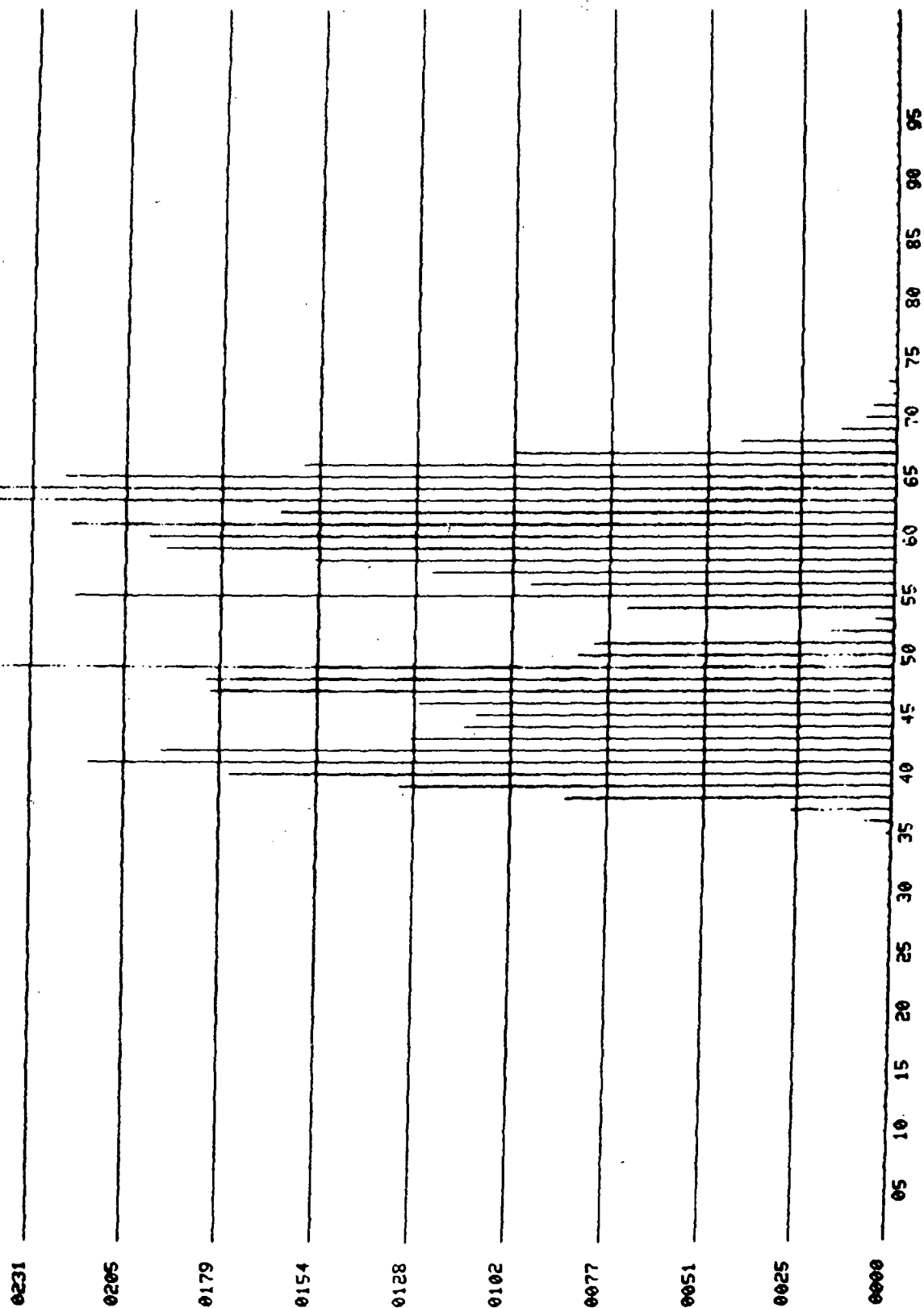
ENTER GRID WIDTH IN WHOLE DEGREES, ONE DIGIT: 5

ENTER GRID LENGTH IN WHOLE METERS, TWO DIGITS: 10

ENTER PERCENT OF OBSERVED VARIATIONS TO BE IGNORED, TWO DIGITS: 95

VELOCITY CELLS AND AMOUNTS OVER 95X POINT
 DAY 238 RUN 04 TAPE 06110 AND 29226

GRID WIDTH 05 DEGREES GRID LENGTH 10 METERS
 RECORD CELLS OF INTEREST AND ENTER "D"



Hardcopy 7

DAY 238 RUN 04 TAPE 06110 AND 20226

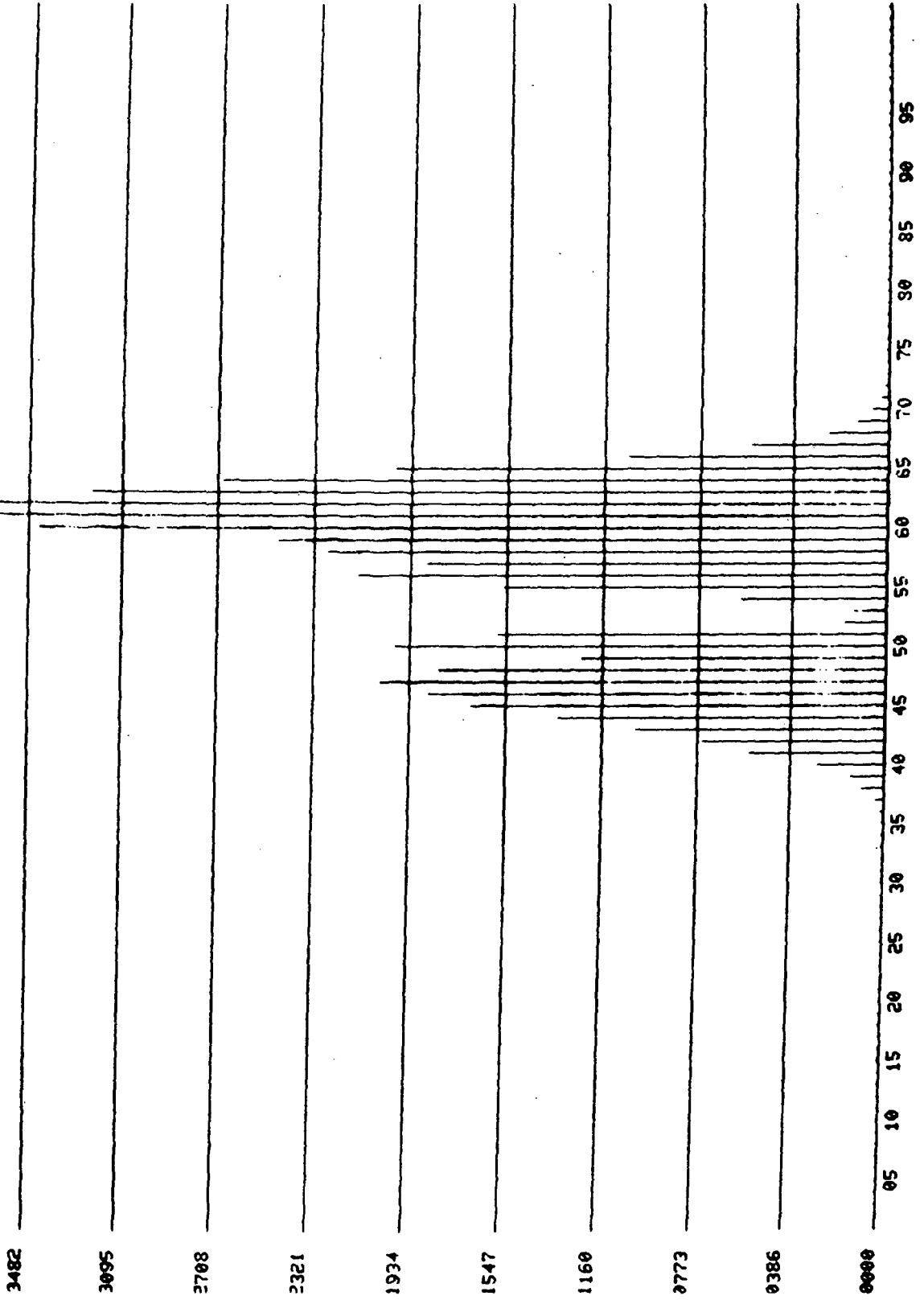
ENTER GRID WIDTH IN WHOLE DEGREES, ONE DIGIT: 1

ENTER GRID LENGTH IN WHOLE METERS, TWO DIGITS: 02

ENTER PERCENT OF OBSERVED VARIATIONS TO BE IGNORED, TWO DIGITS: 95

VELOCITY CELLS AND AMOUNTS OVER 95% POINT
 DAY 238 RUN 04 TAPE 06110 AND 29226

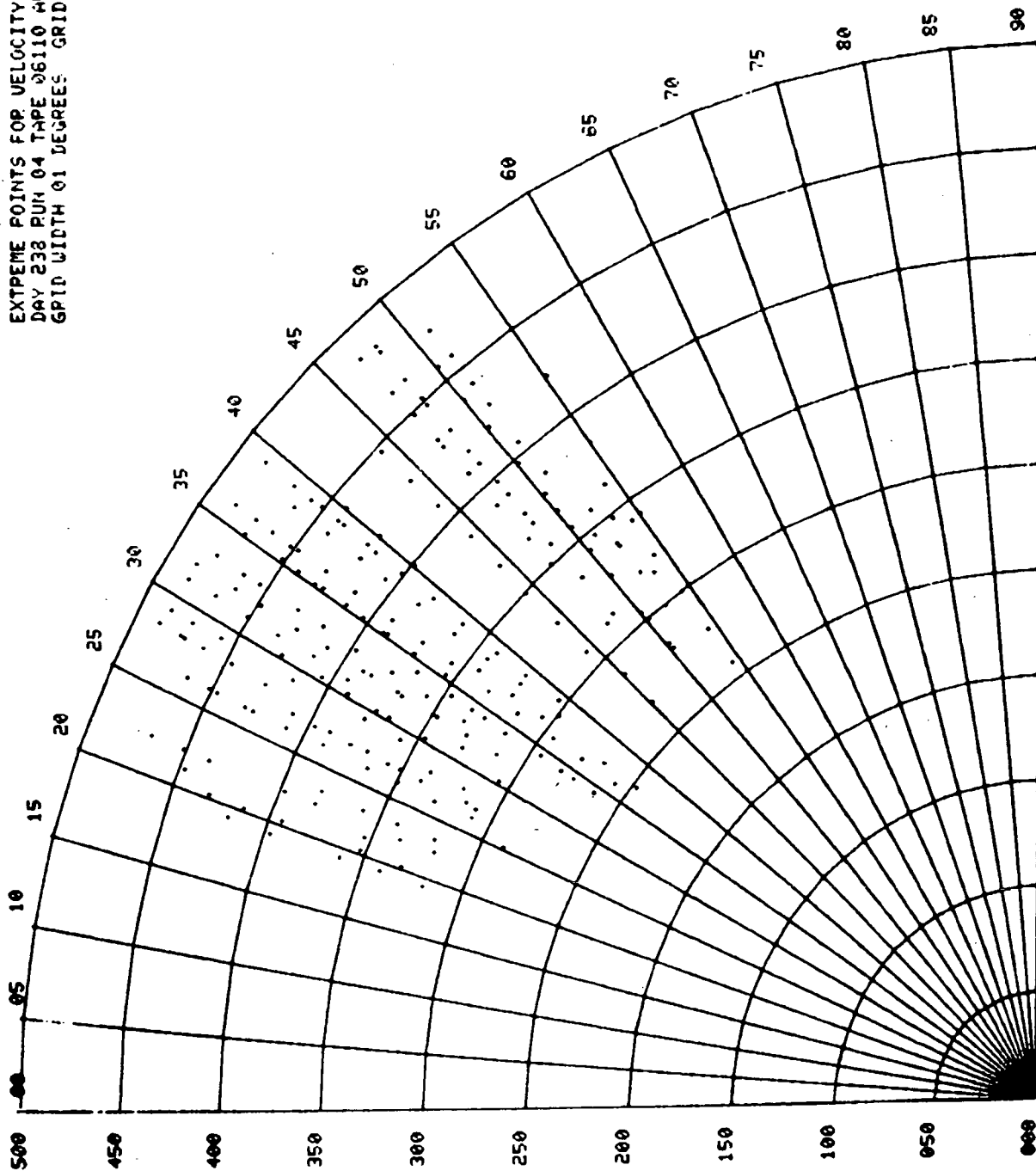
GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS
 RECORD CELLS OF INTEREST AND ENTER 'D'



ENTER 3 DIGIT CELL NUMBER OR 'S' TO STOP OR 'G' TO CYCLE: 061

ORIGINAL PAGE IS
OF POOR QUALITY

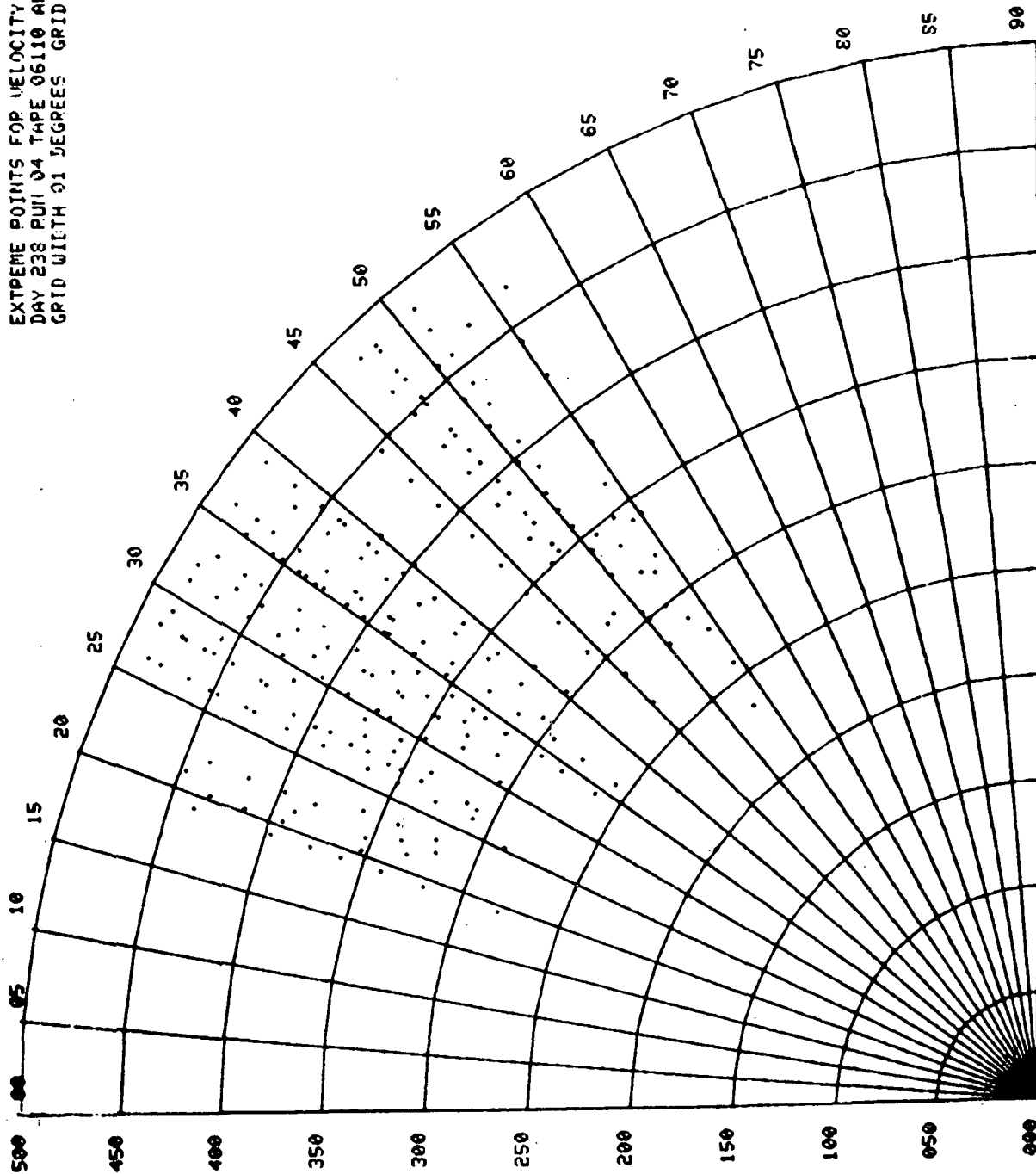
EXTREME POINTS FOR VELOCITY CELL 061 95 PERCENT
DAY 238 RUN 04 TAPE 06110 AND 29226
GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



ENTER 'D' TO CONTINUE

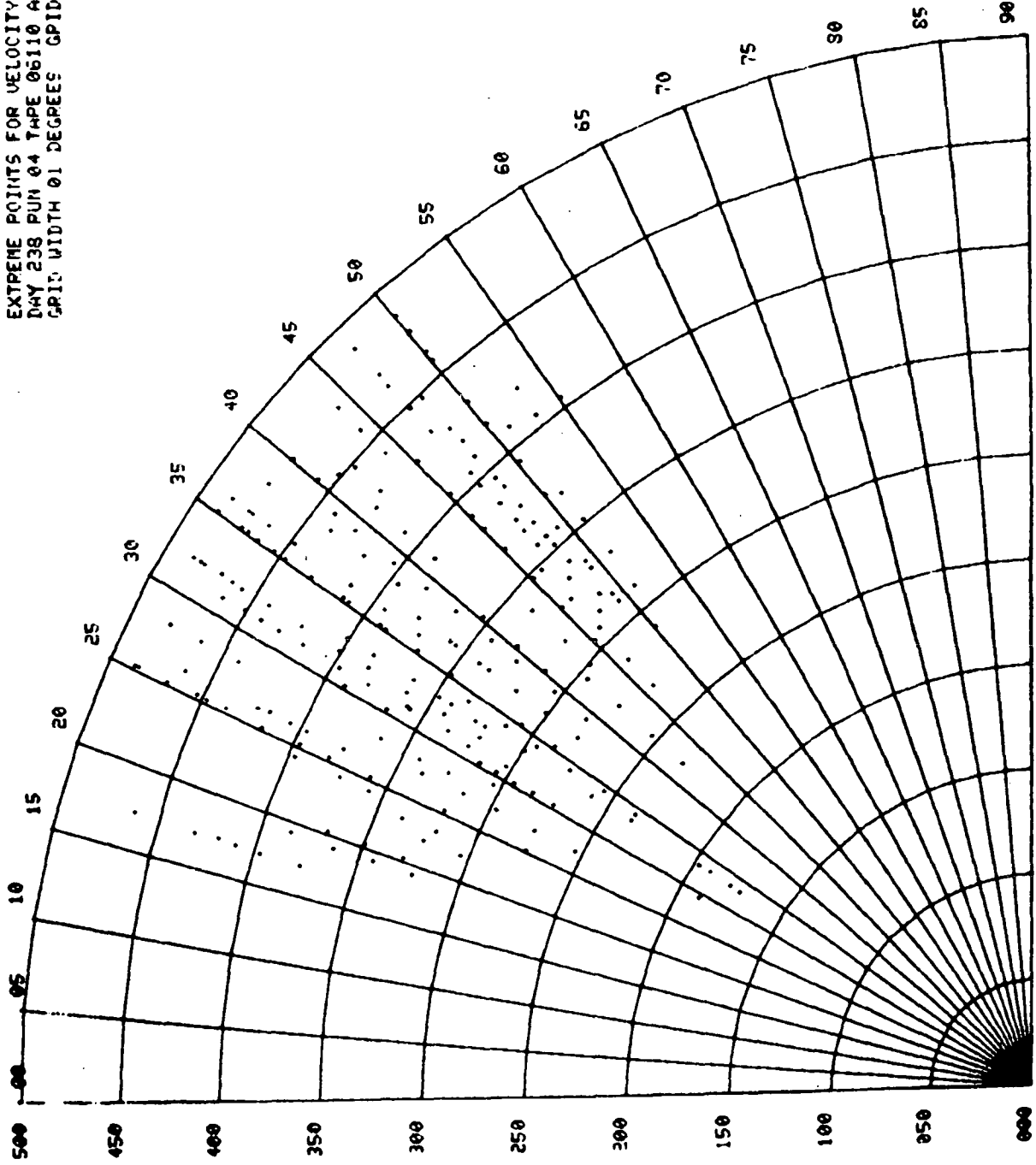
ENTER 'S' TO STOP 'U' FOR A VELOCITY CELL 'G' TO CHANGE GRID OR 'M' FOR MENU

EXTREME POINTS FOR VELOCITY CELL 062 95 PERCENT
 DAY 238 PUL 04 TAPE 06110 AND 29226
 GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



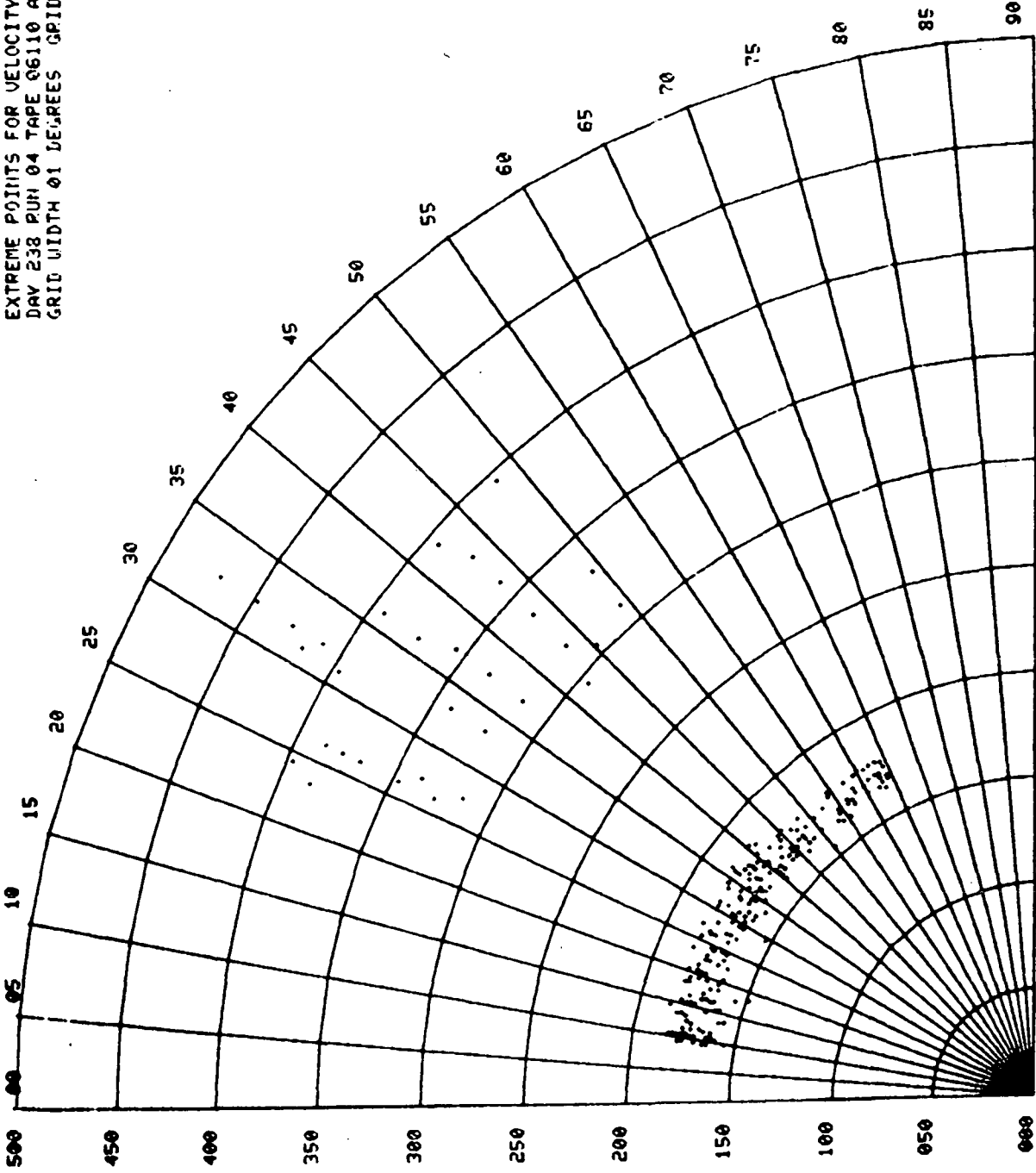
ENTER 'D' TO CONTINUE

EXTREME POINTS FOR VELOCITY CELL 047 95 PERCENT
DAY 238 RUN 04 TAPE 06110 AND 29226
GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



ENTER 'D' TO CONTINUE

EXTREME POINTS FOR VELOCITY CELL 050 95 PERCENT
 DAY 238 RUN 04 TAPE 06110 AND 29226
 GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



13q

ENTER 'D' TO CONTINUE

ENTER 'S' TO STOP 'U' FOR A VELOCITY CELL 'G' TO CHANGE GRID OP 'M' FOR MENUG

DAY 238 RUN 04 TAPE 06110 AND 29226

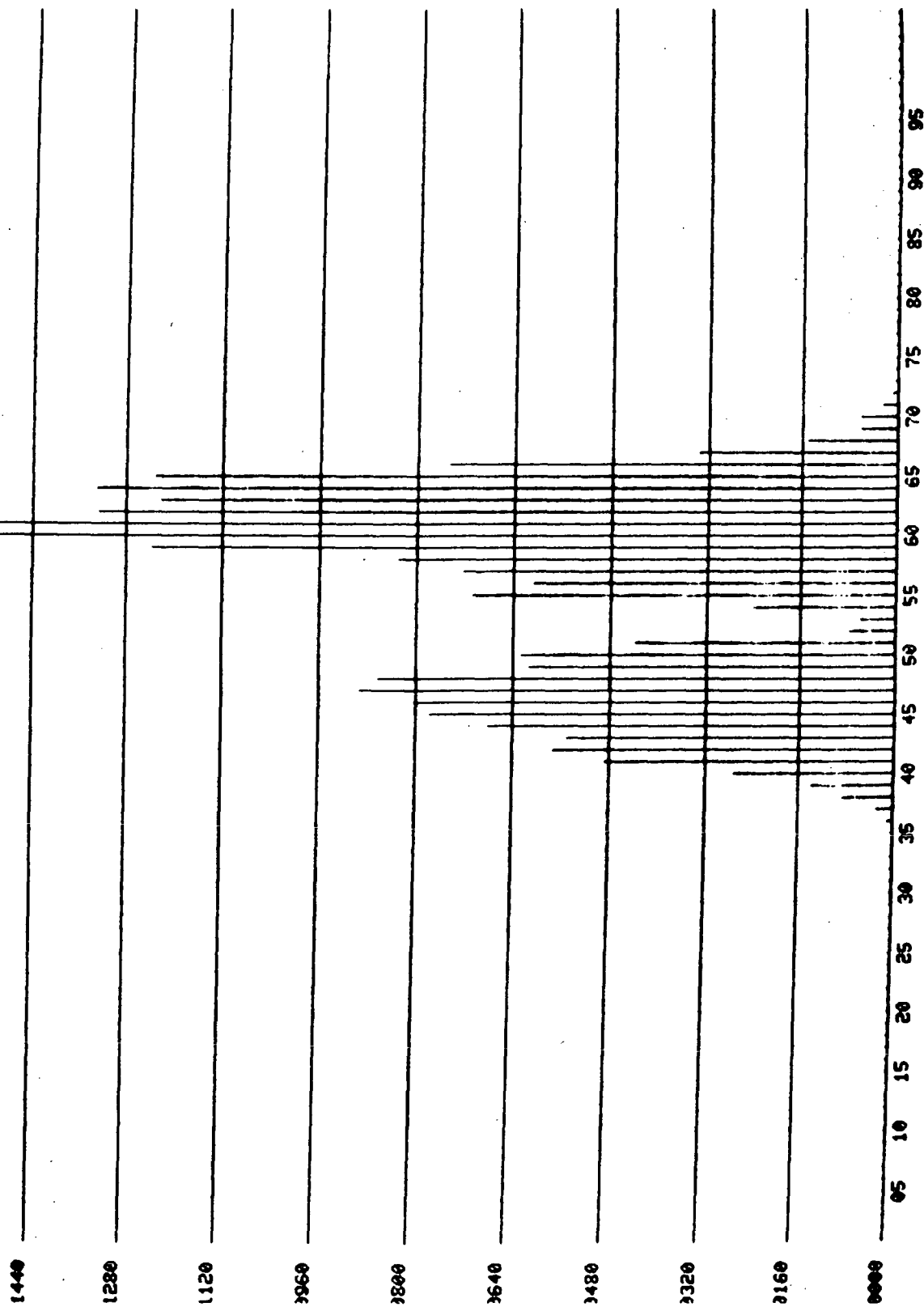
ENTER GRID WIDTH IN WHOLE DEGREES, ONE DIGIT: 1

ENTER GRID LENGTH IN WHOLE METERS, TWO DIGITS: 02

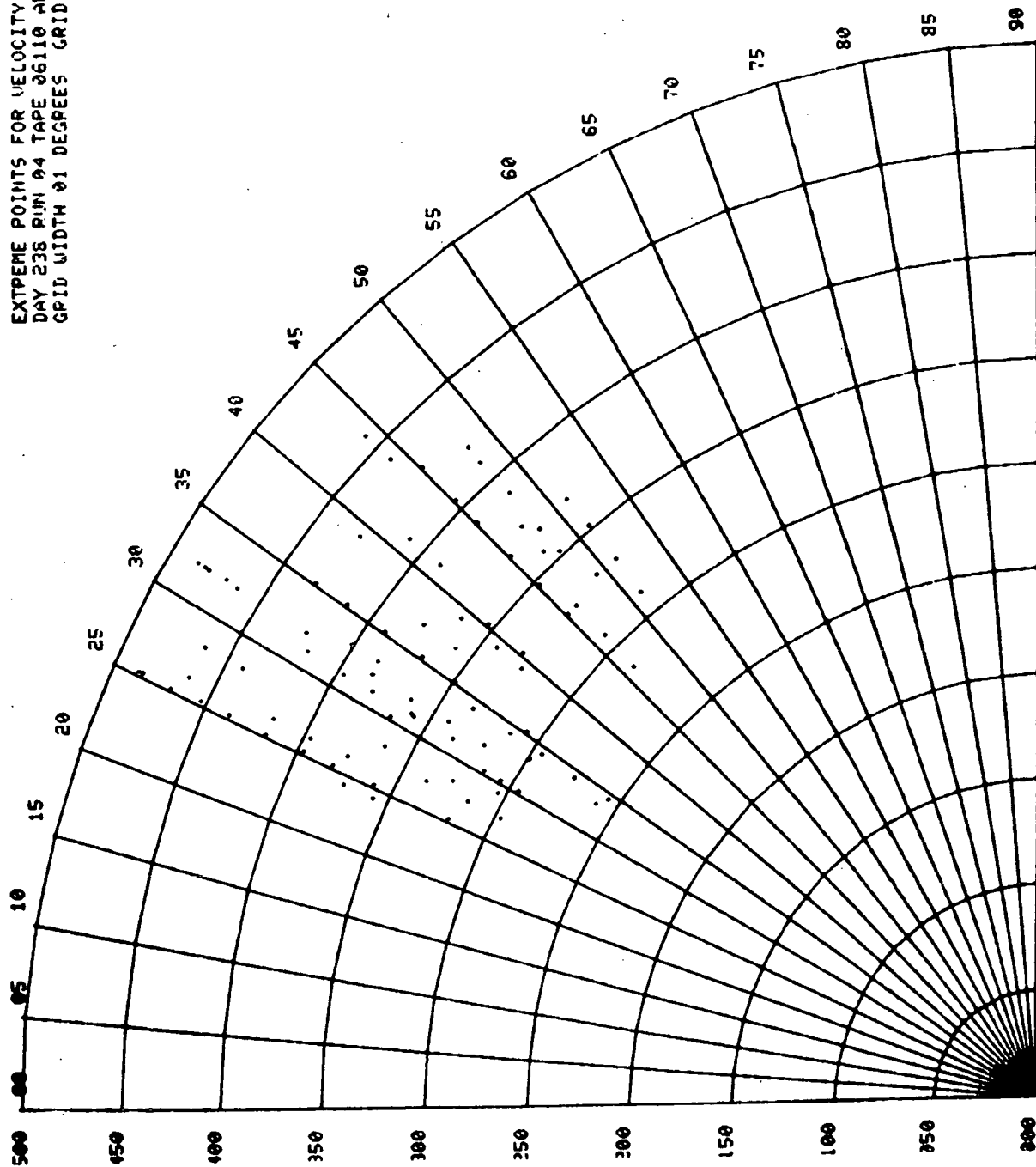
ENTER PERCENT OF OBSERVED VARIATIONS TO BE IGNORED, TWO DIGITS: 98

VELOCITY CELLS AND AMOUNTS OVER 98% POINT
DAY 238 RUN 04 TAPE 06110 AND 29226

GRID WIDTH 01 DEGREES GRID LENGTH 92 METERS
RECORD CELLS OF INTEREST AND ENTER "D"

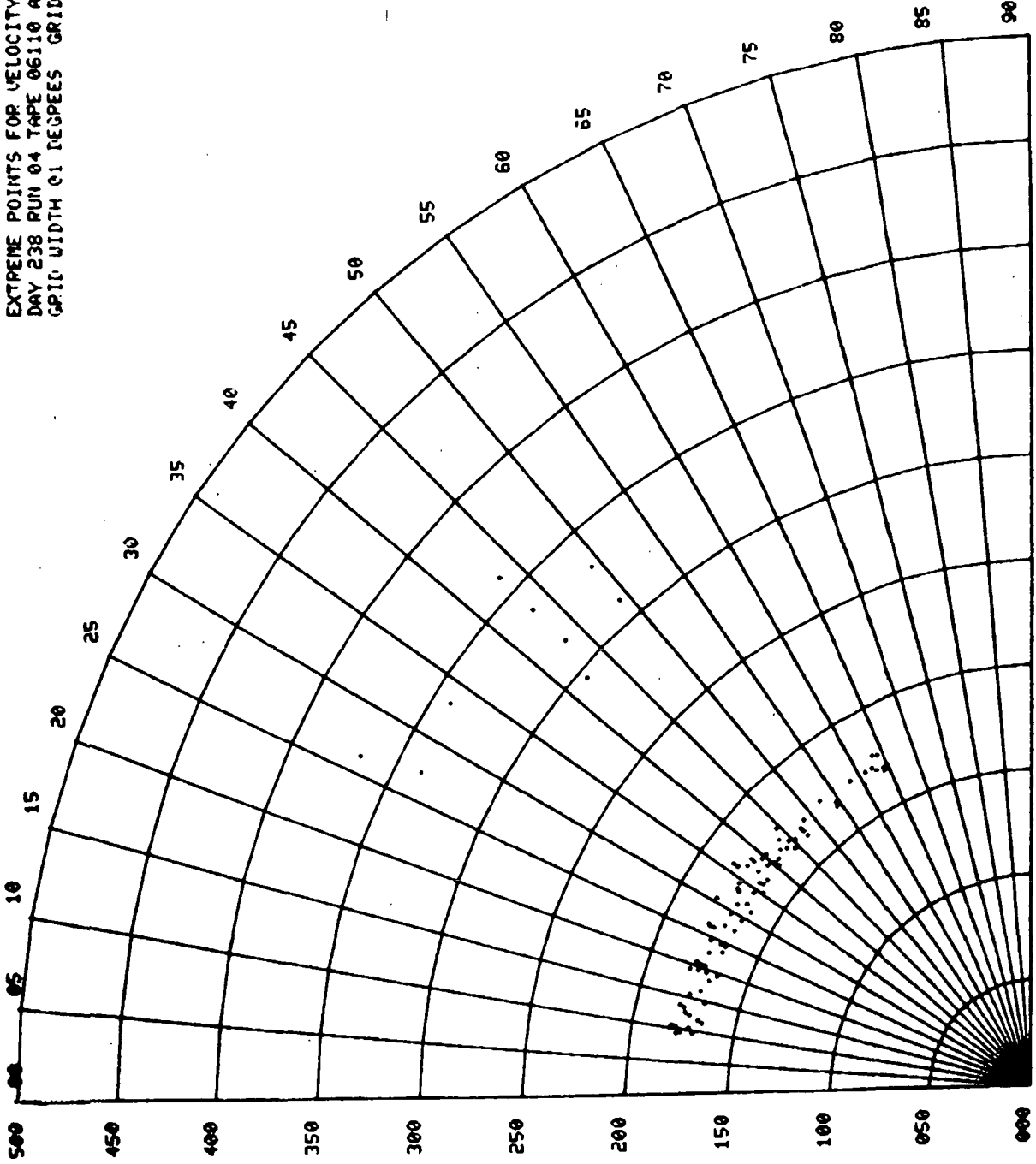


EXTREME POINTS FOR VELOCITY CELL 047 98 PERCENT
DAY 238 RUN 04 TAPE 06110 AND 29226
GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



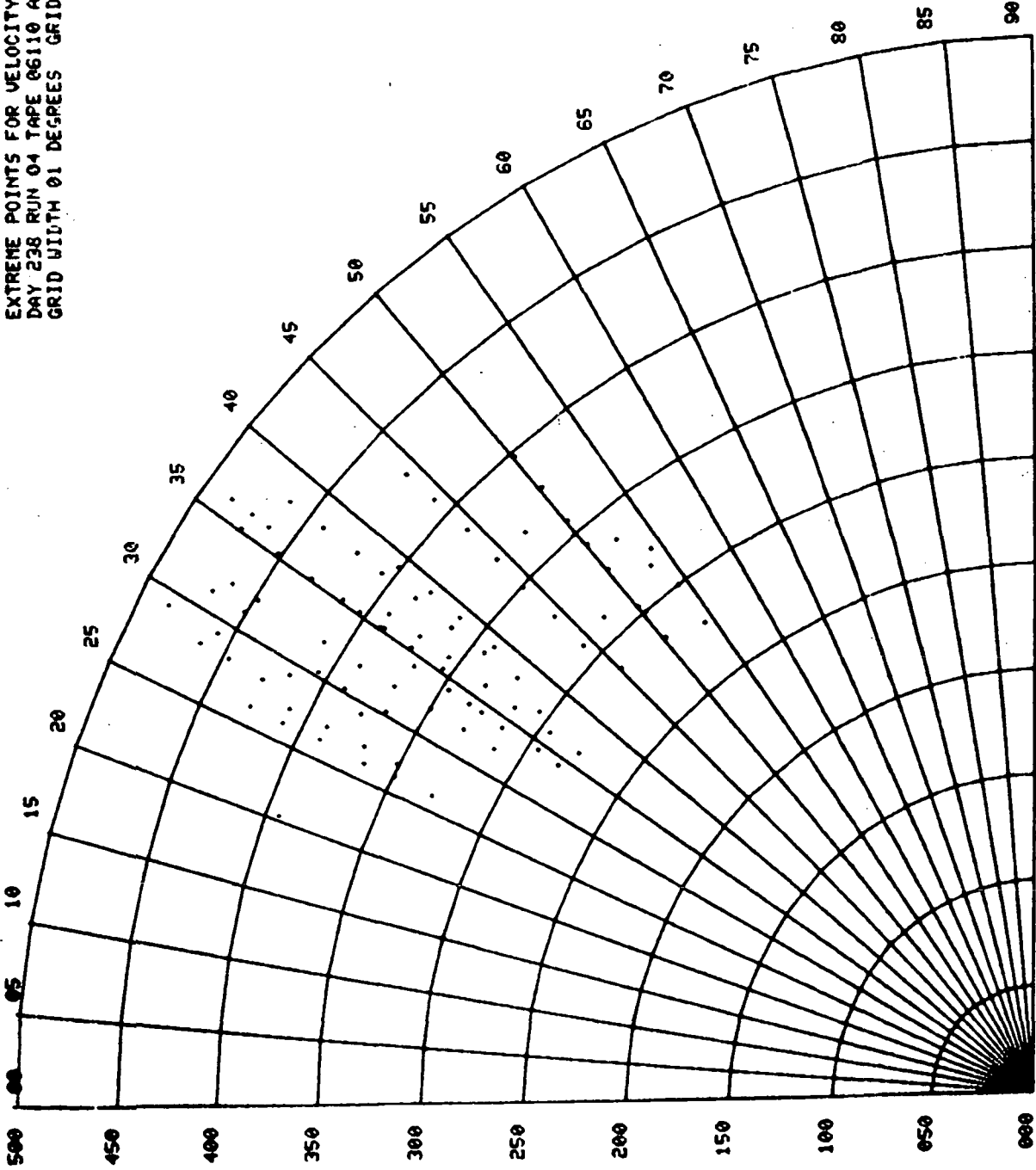
ENTER 'D' TO CONTINUE

EXTREME POINTS FOR VELOCITY CELL 050 98 PERCENT
 DAY 238 RUN 04 TAPE 06110 AND 29226
 GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



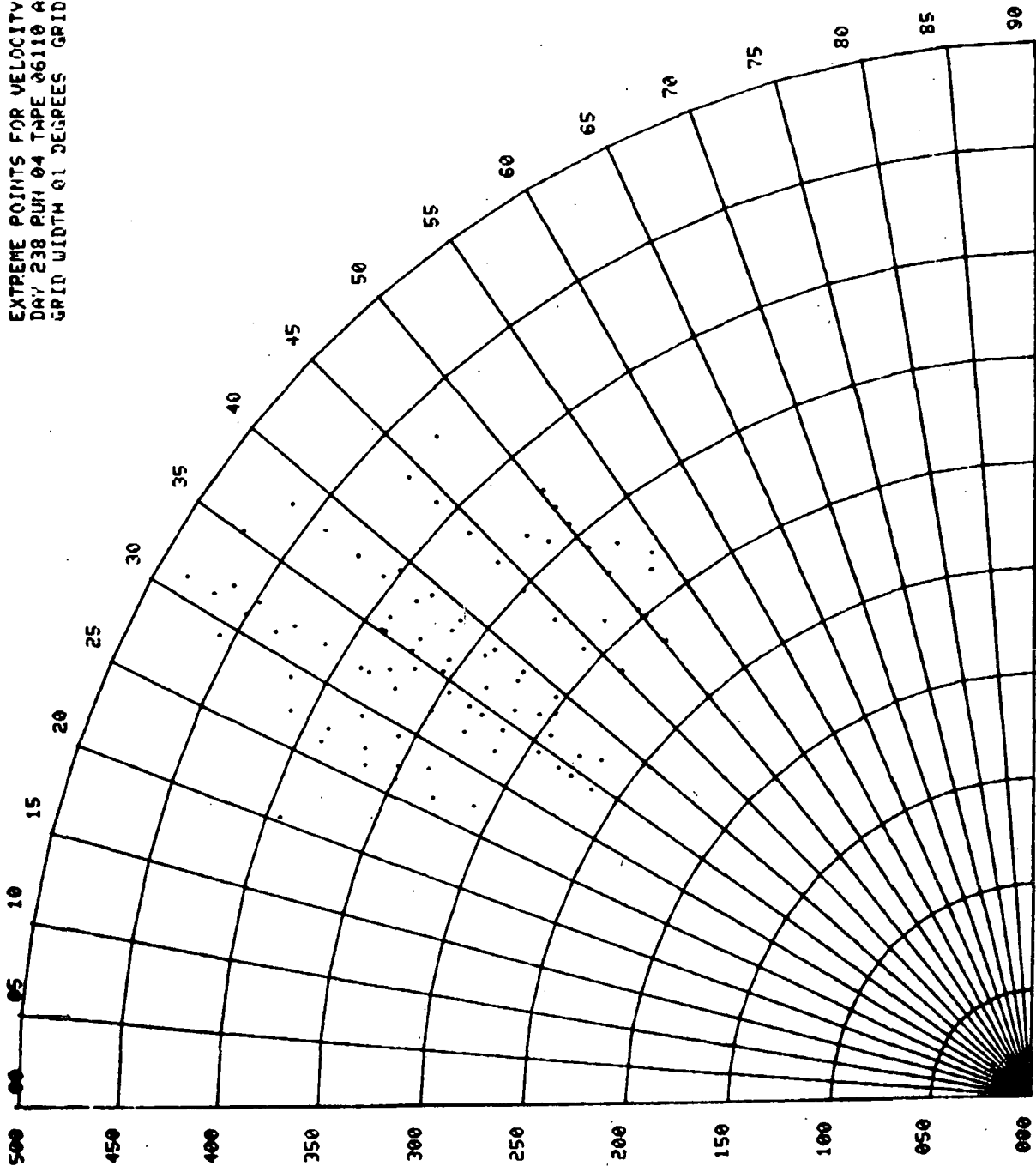
ENTER 'D' TO CONTINUE

EXTREME POINTS FOR VELOCITY CELL 061 98 PERCENT
DAY 238 RUN 04 TAPE 06110 AND 29226
GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



ENTER 'D' TO CONTINUE

EXTREME POINTS FOR VELOCITY CELL 060 98 PERCENT
 DAY 238 RUN 04 TAPE 06110 AND 29226
 GRID WIDTH 01 DEGREES GRID LENGTH 02 METERS



ENTER 'D' TO CONTINUE

ENTER 'S' TO STOP 'U' FOR A VELOCITY CELL 'G' TO CHANGE GRID OR 'M' FOR MENU

ENTER MINIMUM RADIUS IN WHOLE METERS, THREE DIGITS: 250

ENTER MAXIMUM RADIUS IN WHOLE METERS, THREE DIGITS: 500

ENTER MINIMUM ANGLE IN WHOLE DEGREES, TWO DIGITS: 20

ENTER MAXIMUM ANGLE IN WHOLE DEGREES, TWO DIGITS: 55

3-DIMENSIONAL DISPLAY PROGRAMS

OPTIONS

1 ... THREE DIMENSIONAL ONE FULL SCAN DISPLAY

2 ... THREE DIMENSIONAL ONE RAY DISPLAY

9 ... TERMINATE;

ENTER STARTING SCAN NUMBER(2 DIGITS)

NASA PROJECT DUST DEVIL DAY 238 RUN # 4 TAPE 1 OF 2- 6110
 SCAN # 1 FRAME # 1916 ANGLE 8.950 TO FRAME # 2525 ANGLE 45.224 CRITICAL AMP AT CELL 60

OPTIONS

111 ... IMAX, R, A DISPLAY (PART 1 OF 2, CELL 52 - 1)
 112 ... PART 2 OF OPTION 111, CELL 53 - 104
 121 ... I, R, A DISPLAY AT GIVEN U CELL
 211 ... U, R, A DISPLAY (VELOCITY AT IMAX. PART 1 OF 2, CELL 52 - 1)
 212 ... PART 2 OF OPTION 211, CELL 53 - 104
 221 ... UMAX R, A DISPLAY (PART 1 OF 2, CELL 52 - 1)
 222 ... PART 2 OF OPTION 221, CELL 53 - 104
 311 ... U & IMAX, R, A DISPLAY (PART 1 OF 2, CELL 52 - 1)
 312 ... PART 2 OF OPTION 311, CELL 53 - 104

555 OR 55 ... "RAY" DISPLAY

999 OR 99 ... GO TO NEXT DATA

ENTER OPTION221

ENTER AMP FOR MAX VELOCITY...(3 DIGITS)005

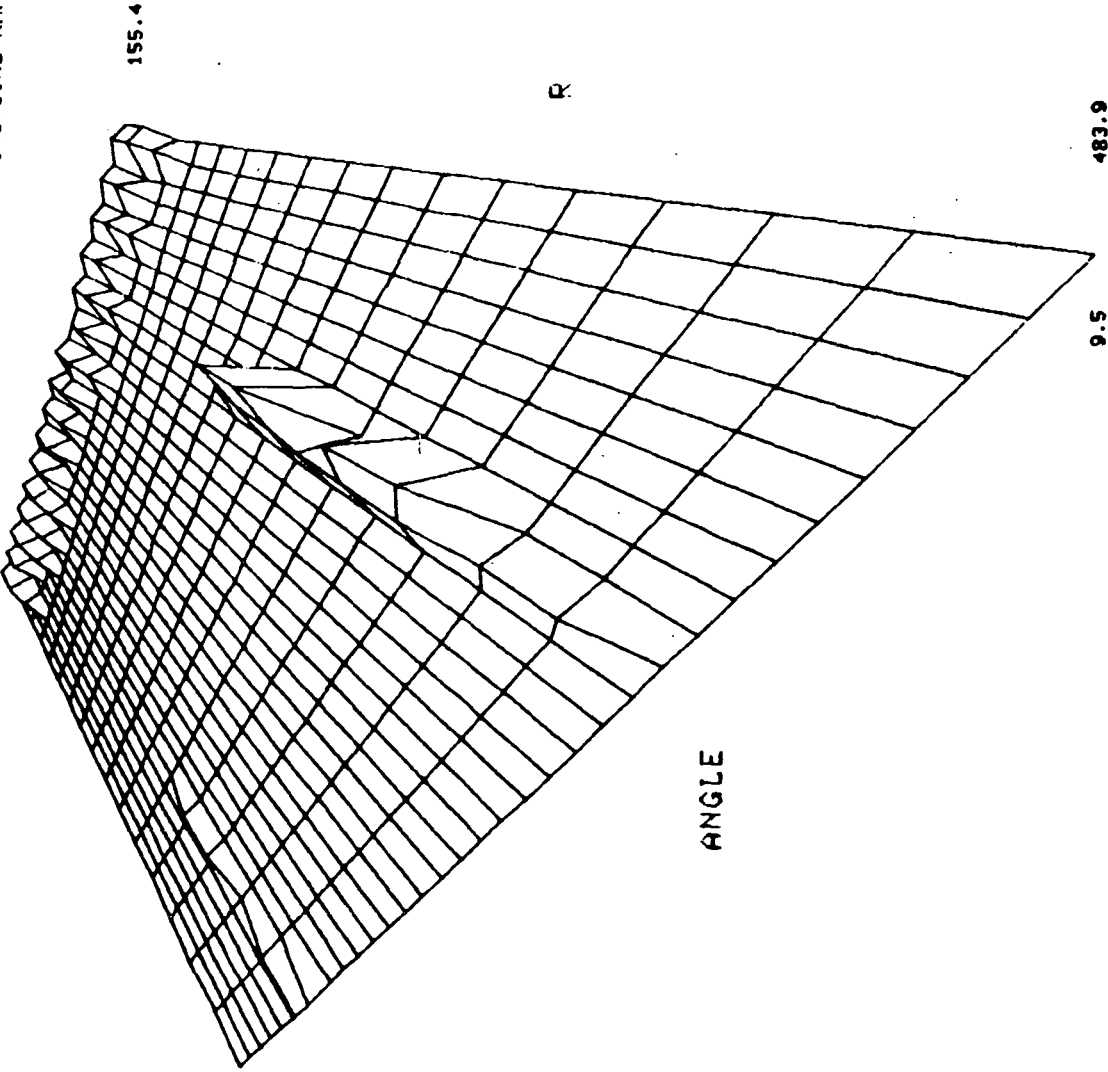
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NASA PROJECT DUST DEVIL DAY 638 RUN # 4 TAPE 1 OF 2- 5110
SCAN # 1 FRAME # 1916 ANGLE 3.950 TO FRAME # 2525 ANGLE 45.224 CRITICAL AMP AT CELL 60

OPTION # 22-1

MAXIMUM U - 9.0
AVERAGE U - 1.4

ANGLE
1 9.5
2 9.8
3 10.4
4 11.2
5 12.2
6 13.3
7 14.4
8 15.6
9 16.8
10 18.0
11 19.1
12 20.2
13 21.3
14 22.5
15 23.7
16 24.9
17 26.1
18 27.3
19 28.4
20 29.6
21 30.8
22 31.9
23 33.0
24 34.2
25 35.4
26 36.5
27 37.6
28 38.9
29 40.0
30 41.2
31 42.3
32 43.5
33 44.4
34 45.1



R
1 155.4
2 174.7
3 194.0
4 213.3
5 232.7
6 252.0
7 271.3
8 290.6
9 309.9
10 329.3
11 348.6
12 367.9
13 387.2
14 406.6
15 425.9
16 445.2
17 463.9

U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT 1 - 5

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IF YOU ARE FINISHED WITH THIS PLOT TYPE 999, IF NOT TYPE 1

ENTER OPTION222
ENTER AMP FOR MAX VELOCITY...(3 DIGITS)010

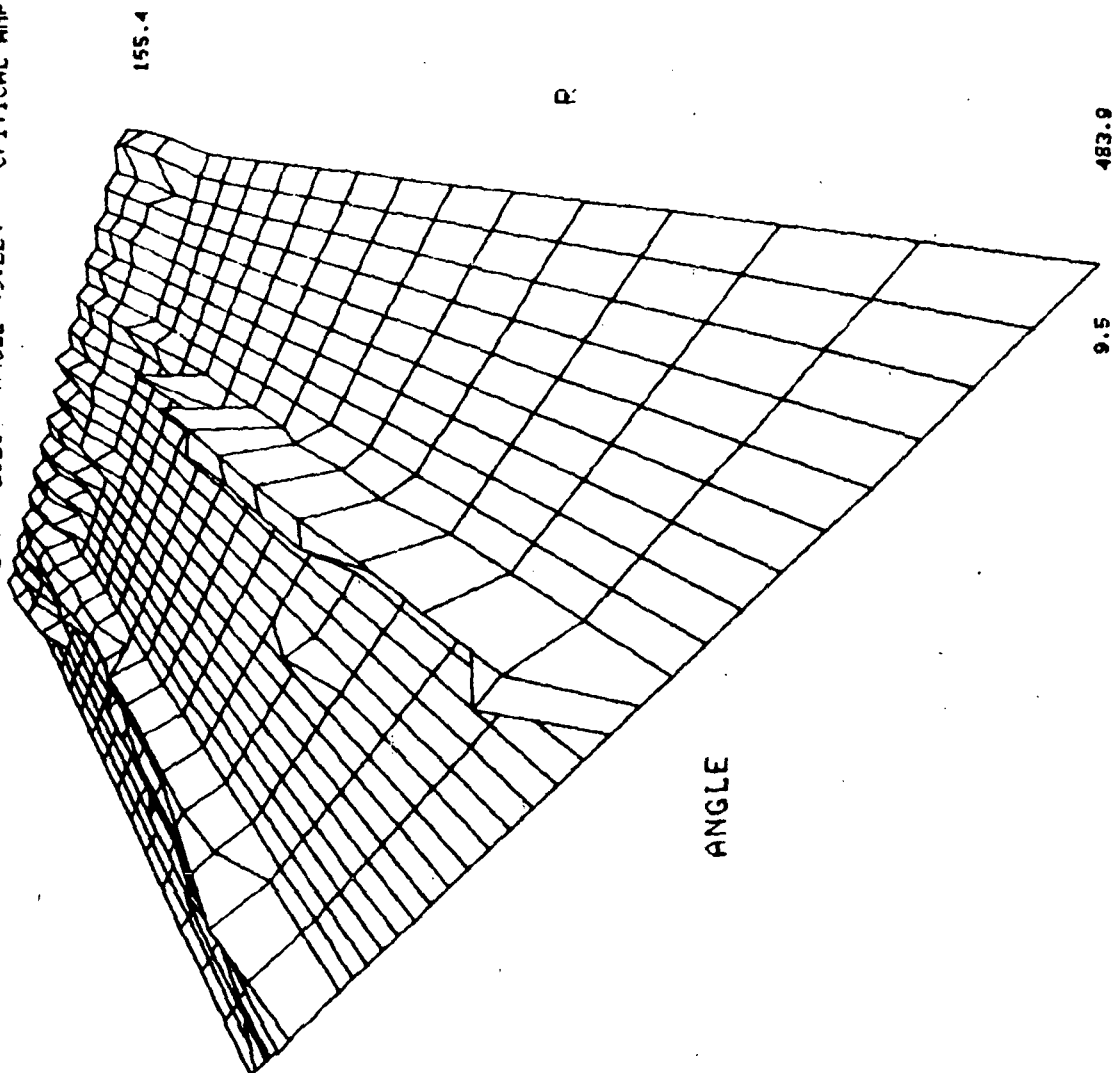
NASA PROJECT DUST DEVIL DAY 238 RUN # 4 TAPE 1 OF 2- 6110
 SCMI # 1 FRAME # 1916 ANGLE 3.950 TO FRAME # 2525 ANGLE 45.224 CRITICAL AMP AT CELL 60

OPTION # 22-2

MAXIMUM U - 12.0
 AVERAGE U - 2.3

ANGLE	
1	9.5
2	9.8
3	10.4
4	11.2
5	12.2
6	13.3
7	14.4
8	15.6
9	16.8
10	18.0
11	19.1
12	20.2
13	21.3
14	22.5
15	23.7
16	24.9
17	26.1
18	27.3
19	28.4
20	29.6
21	30.8
22	31.9
23	33.0
24	34.2
25	35.4
26	36.5
27	37.6
28	38.9
29	40.0
30	41.2
31	42.3
32	43.5
33	44.4
34	45.1

R	
1	155.4
2	174.7
3	194.0
4	213.3
5	232.7
6	252.0
7	271.3
8	290.6
9	309.9
10	329.3
11	348.6
12	367.9
13	387.2
14	406.5
15	425.9
16	445.2
17	463.9



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U_{max}, R, A DISPLAY AMPLITUDE THRESHOLD AT 1 - 10

13hh

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ENTER OPTIONS55

SCAN 8 1
ENTER ANGLE(REAL)18.5
ENTER SPREAD(REAL)1.5

NASA PROJECT DUST DEVIL DAY 238 PUN # 4 TAPE 1 OF 2- 6110
 SCAN # 1 FRAME # 1916 ANGLE 8.950 TO FRAME # 2525 ANGLE 45.224 CRITICAL AMP AT CELL 60
 FRAME # 2020 TO 2099

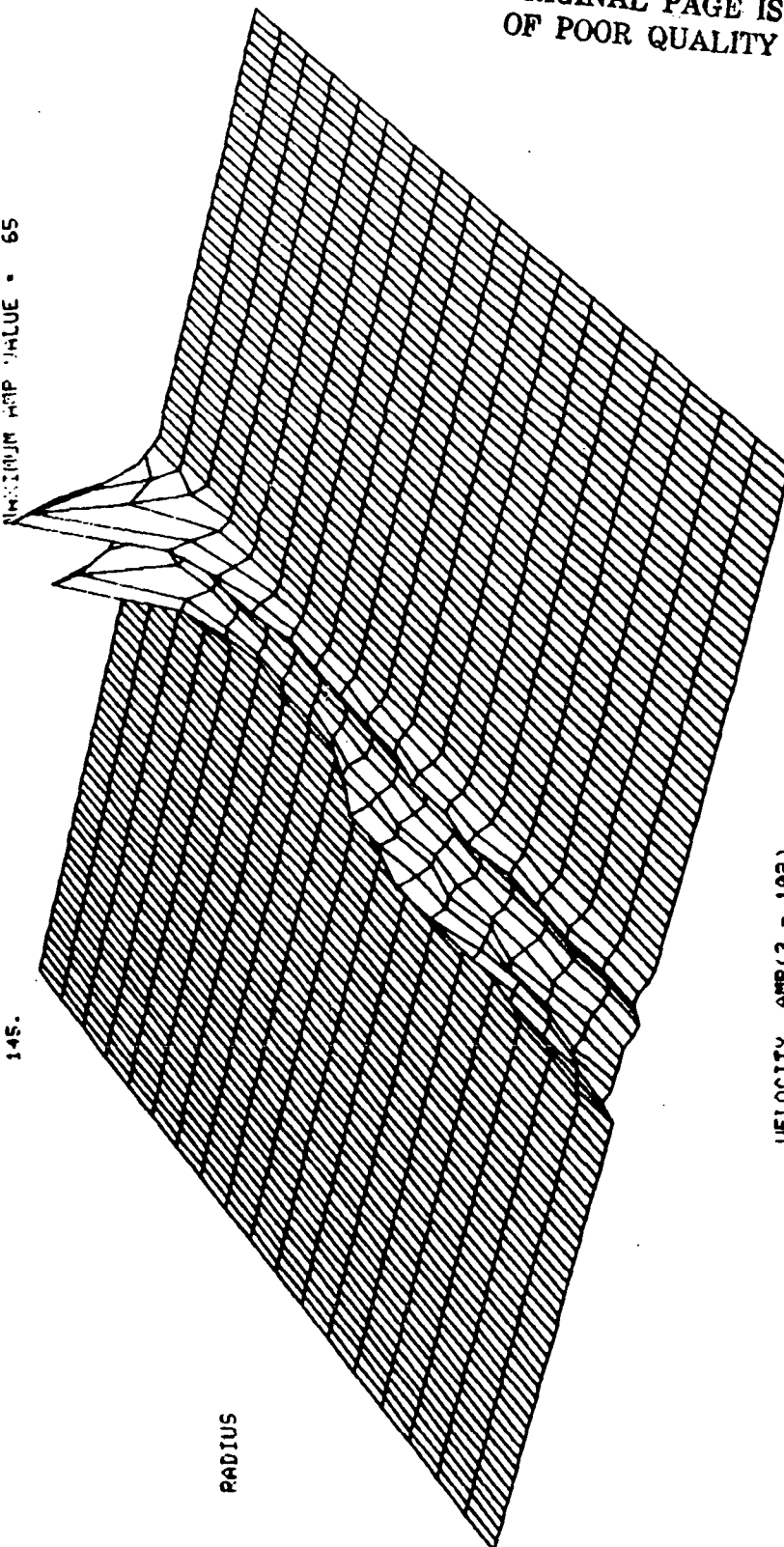
ANGLE - 18.05

MAXIMUM AMP VALUE - 65

145.

RADIUS

478.



VELOCITY..AMP(3 - 102)

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13jj

APPENDIX II
PROGRAM LISTINGS

ACTIVE AREA LOCATOR PROGRAM

C

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ACTIVE AREA LOCATOR PROGRAM
DIMENSION IAMP(104),IMIN(104),IMAX(104),IFREQ(256,104)
DIMENSION I99(104),ICOUNT(104),IOVER(104),POS(4),IVAR(104)
DIMENSION IDATA(20000,2),LINE1(41),LINE2(38),LINE3(6),LINE4(58)
DIMENSION JKEEP1(20000)
DIMENSION LINE5(21),LINE6(48),LINE7(76)
DIMENSION ISTART(60),T1(60),ISTOP(60),T2(60)
DIMENSION ITITLE(36),LINE8(46),LINE9(47),LINE10(64),ITAPES(2)
DIMENSION LINE11(45)
DIMENSION ISPTX(11,19),ISPTY(11,19)
DIMENSION MINI(3),MAXI(3),LINE12(52),LINE13(50)
DIMENSION LINE14(16)
EQUIVALENCE (X,PCS(1)),(Y,POS(2)),(R,POS(3)),(T,POS(4))
DATA LINE1/86,69,76,79,67,73,84,89,32,67,69,76,76,83,32,65,78,68,
132,65,77,79,85,78,84,83,32,79,86,69,82,32,32,32,37,32,80,79,73,78,
184/
DATA LINE2/82,69,67,79,82,68,32,67,69,76,76,83,32,79,70,32,73,78,
184,69,82,69,83,84,32,65,78,68,32,69,78,84,69,82,32,34,68,34/
DATA LINE4/69,78,84,69,82,32,51,32,68,73,71,73,84,32,67,69,76,76,
132,78,85,77,66,69,82,32,79,82,32,34,83,34,32,84,79,32,83,84,79,
180,32,79,82,32,34,71,34,32,84,79,32,67,89,67,76,69,58,32/
DATA LINE5/69,78,84,69,82,32,34,68,34,32,84,79,32,67,79,78,84,73,
178,85,69/
DATA LINE6/69,88,84,82,69,77,69,32,80,79,73,78,84,83,32,70,79,82,
132,86,69,76,79,67,73,84,69,32,67,69,76,76,32,32,32,32,32,32,32,
132,80,69,82,67,69,78,84/
DATA LINE7/69,78,84,69,82,32,34,83,34,32,84,79,32,83,84,79,80,32,
134,86,34,32,70,79,82,32,65,32,86,69,76,79,67,73,84,89,32,67,69,76,
176,32,34,71,34,32,84,79,32,67,72,65,78,71,69,32,71,82,73,68,32,79,
182,32,34,77,34,32,70,79,82,32,77,69,78,85/
DATA LINE10/69,78,84,69,82,32,80,69,82,67,69,78,84,32,79,70,32,79,
166,83,69,82,86,69,68,32,86,65,82,73,65,84,73,79,78,83,32,84,79,32,
166,69,32,73,71,78,79,82,69,68,44,32,84,87,79,32,68,73,71,73,84,83,
158,32/
DATA LINE8/69,78,84,69,82,32,71,82,73,68,32,87,73,68,84,72,32,73,
178,32,87,72,79,76,69,32,68,69,71,82,69,69,83,44,32,79,78,69,32,68,
173,71,73,84,58,32/
DATA LINE9/69,78,84,69,82,32,71,82,73,68,32,76,69,78,71,84,72,32,
173,78,32,87,72,79,76,69,32,77,69,84,69,82,83,44,32,84,87,79,32,68,
173,71,73,84,83,58,32/
DATA ITITLE/58,65,89,32,32,32,32,32,82,85,78,32,32,32,32,32,84,65,80,
169,32,32,32,32,32,32,32,65,78,68,32,32,32,32,32,32,32/
DATA LINE11/71,82,73,68,32,67,73,68,84,72,32,32,32,32,68,69,71,82,
169,69,83,32,32,71,82,73,68,32,76,69,78,71,84,72,32,32,32,32,77,69,
184,69,82,83,32/
DATA LINE12/69,78,84,69,82,32,32,32,32,73,77,85,77,32,82,65,68,73,
185,83,32,73,78,32,87,72,79,76,69,32,77,69,84,69,82,83,44,32,84,72,
182,69,69,32,68,73,71,73,84,83,58,32/
DATA LINE13/69,78,84,69,82,32,32,32,32,73,77,85,77,32,65,78,71,76,
169,32,73,78,32,87,72,79,76,69,32,68,69,71,82,69,69,83,44,32,84,87,
179,32,68,73,71,73,84,83,58,32/
DATA LINE14/83,84,79,82,65,71,69,32,69,88,67,69,69,68,69,68/
DATA MINI/77,73,78/
DATA MAXI/77,65,88/
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C      INITIALIZE FOR CARD READING
      CALL INITT(120)
      CALL TERM(3,1024)
      CALL CHRSLZ(3)
      ITAPE=0
      ITAPES(2)=0
      NTAPE=0
      ISCAN=1
C      READ CARD WITH SCAN LIMITS DAY RUN AND TAPE NUMBER
54 READ(5,101,END=53) ISTART(ISCAN),T1(ISCAN),ISTOP(ISCAN),T2(ISCAN),
      IIDAY,IRUN,ITAPE1
101 FORMAT(I6,F6.3,I6,F6.3,I3,I2,I5)
C      COUNT THE NUMBER OF SCANS READ
      ISCAN=ISCAN+1
C      SAME TAPE AS BEFORE? YES TO READ AGAIN
      IF(ITAPE.EQ.ITAPE1) GO TO 54
C      NO, COUNT ONE TAPE
      NTAPE=NTAPE+1
C      SAVE FIRST SCAN NUMBER FOR THIS NEW TAPE
      ISCAN1=ISCAN-1
C      PUT TAPE NUMBER INTO STORAGE
      ITAPES(NTAPE)=ITAPE1
C      NOW MAKE NEW TAPE LOOK LIKE OLD ONE
      ITAPE=ITAPE1
C      CONTINUE READING
      GO TO 54
C      RECORD TOTAL NUMBER OF SCANS
53 ISCAN=ISCAN-1
C      DUMMY VALUE TO BE SURE LAST SCAN IS PROCESSED CORRECTLY
      ISTART(ISCAN+1)=0
C      PLACE DESCRIPTIVE INFO INTO TITLE
      IIDAY=IDAY
      CALL DIGITS(IIDAY,ITITLE(5),3)
      IIRUN=IRUN
      CALL DIGITS(IIRUN,ITITLE(13),2)
      IITAPE=ITAPES(1)
      CALL DIGITS(IITAPE,ITITLE(21),5)
      IITAPE=ITAPES(2)
      CALL DIGITS(IITAPE,ITITLE(31),5)
C      SET LENGTH OF TITLE DEPENDING ON NUMBER OF TAPES (1 OR 2)
      LENGTH=26
      IF(NTAPE.EQ.2) LENGTH=36
C      LOOP TO 48 CALCULATES INTERSECTION OF EVERY 5 DEGREES WITH
C      EVERY 50 METERS FROM 0 TO 90 DEGREES AND 0 TO 500 METERS
C      SAVE THE SCREEN COORDINATES IN ISPOTX AND ISPOTY
      DO 48 I=1,11
      RR=50*(I-1)
      DO 48 J=1,19
      TT=5*(J-1)*.0174533
      TX=RR*SIN(TT)
      TY=RR*COS(TT)
      TX=TX*1.5+40
      TY=TY*1.5+20
      ISPOTX(I,J)=TX

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48 ISPTY(I,J)=TY
C   CLEAR SOME COUNTING ARRAYS
65 DO 1 I=1,104
    IOVER(I)=0
    ICOUNT(I)=0
    DO 1 J=1,256
      1 IFREQ(J,I)=0
C   DISPLAY TITLE ON NEW PAGE
    CALL NEWPAG
    CALL ANSTR(LENGTH,ITITLE)
    CALL NEWLIN
C   ASK FOR GRID WIDTH
    CALL ANSTR(46,LINE8)
55 CALL BELL
    CALL TINSTR(1,IWIDTH)
    IWIDTH=IWIDTH-48
    IF(IWIDTH.LT.1.OR.IWIDTH.GT.9) GO TO 55
C   PUT WIDTH INTO LINE11
    JWIDTH=IWIDTH
    CALL DIGITS(JWIDTH,LINE11(12),2)
    CALL NEWLIN
C   GET GRID LENGTH
    CALL ANSTR(47,LINE9)
56 CALL BELL
    CALL TINSTR(2,LINE3)
    ILNGTH=LINE3(2)-48+10*(LINE3(1)-48)
    IF(ILNGTH.LT.1.OR.ILNGTH.GT.99) GO TO 56
C   NUMBER OF GRIDS WITH SAME ANGLE IS 500 DIVIDED BY LENGTH
    ISPAN=500/ILNGTH
C   PUT LENGTH INTO LINE11
    JLNTH=ILNGTH
    CALL DIGITS(JLNTH,LINE11(36),2)
    CALL NEWLIN
C   GET REJECTION PERCENTAGE
    CALL ANSTR(64,LINE10)
57 CALL BELL
    CALL TINSTR(2,LINE3)
    IPERCT=LINE3(2)-48+10*(LINE3(1)-48)
    IF(IPERCT.LT.1.OR.IPERCT.GT.99) GO TO 57
C   PUT THIS INTO LINE1
    JPERCT=IPERCT
    CALL DIGITS(JPERCT,LINE1(33),2)
C   AND ALSO INTO LINE6
    JPERCT=IPERCT
    CALL DIGITS(JPERCT,LINE6(39),2)
C   CLEAR PAGE AND INITIALIZE FOR TAPE READING LOOP
    CALL NEWPAG
    IRET=0
    IHOP=0
C   LOOP TO 63 READS RAW DATA TAPE ADDS GRID NUMBER AND WRITES OUT
    DO 63 I=1,ISCAN
C   LIMITING FRAME NUMBERS FOR THIS SCAN
    IHUNT=ISTART(I)
    IEND=ISTOP(I)

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C      IF IN THE SECOND TAPE, GO AROUND FIRST TAPE STUFF
      IF(NTAPE.EQ.2.AND.I.GE.ISCAN1) GO TO 61
C      HAVE WE ALREADY READ FIRST FRAME? YES, GO AROUND
      IF(IHOP.EQ.1) GO TO 60
C      READ FORWARD A FRAME
58 CALL GET(IFRAME,POS,INC,IAMP,IRET)
C      ARE WE AT START OF SCAN? NO, CONTINUE LOOKING
      IF(IFRAME.NE.IHUNT) GO TO 58
C      YES, DO NOT LOSE GOOD DATA
      GO TO 59
C      READ A FRAME FROM SCAN
60 CALL GET(IFRAME,POS,INC,IAMP,IRET)
C      GET INCREMENT OF RADIUS
59 IR = R / ILNGTH
C      MAKE SURE UNEXPECTED NUMBERS DO NOT PRODUCE STRANGE THINGS
      IF(R.LT.0) IR=C
      IF(R.GE.500) IR=ISPAN-1
      IF(IR.GE.ISPAN) IR=ISPAN-1
C      GET ANGLE INCREMENT *** TAKE CARE OF DOUBLE ANGLE PHENOMENON ***
      IT=(I*2)/IWIDTh
C      MAKE SURE BAD DATA DOES NOT SINK THE SHIP
      IF(IT.LT.0) IT=0
      IF(IT.GT.89) IT=89
C      NOW WE HAVE THE ALL-IMPORTANT GRID NUMBER
      IGRID=ISPAN*IT+IR+1
C      PUT OUT FRAME INFO WITH GRID NUMBER ADDED
      CALL PUT(IGRID,IFRAME,X,Y,R,T,INC,IAMP,IRET)
C      ARE WE DONE WITH SCAN? NO, CONTINUE READING FRAMES
      IF(IFRAME.NE.IEND) GO TO 60
C      DECIDE WHETHER OR NOT TO READ FORWARD TO FIND NEXT SCAN START
      IHOP=1
      IF(IEND.NE.ISTART(I+1).OR.(NTAPE.EQ.2.AND.I+1.EQ.ISCAN1)) IHOP=0
C      AND HOP THE PROCESSING FOR SECOND TAPE
      GO TO 63
C      PROCESSING FOR TAPE TWO USES GET2 SUBROUTINE. SAME PROCESSING
61 IF(IHOP.EQ.1) GO TO 67
68 CALL GET2(IFRAME,POS,INC,IAMP,IRET)
      IF(IFRAME.NE.IHUNT) GO TO 68
      IF(I.EQ.ISCAN1.AND.ISTOP(ISCAN1-1).EQ.IHUNT) GO TO 67
      GO TO 69
67 CALL GET2(IFRAME,POS,INC,IAMP,IRET)
69 IR=R/ILNGTH
      IF(R.LT.0) IR=C
      IF(R.GE.500) IR=ISPAN-1
      IF(IR.GE.ISPAN) IR=ISPAN-1
      IT=(I*2)/IWIDTh
      IF(IT.LT.0) IT=0
      IF(IT.GT.89) IT=89
      IGRID=ISPAN*IT+IR+1
      CALL PUT(IGRID,IFRAME,X,Y,R,T,INC,IAMP,IRET)
      IF(IFRAME.NE.IEND) GO TO 67
      IHOP=1
      IF(IEND.NE.ISTART(I+1)) IHOP=0
63 CONTINUE

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C      SIGNAL ROUTINES TO CLOSE FILES
      IRET=1
      CALL PUT(IGRID,IFRAME,X,Y,R,T,INC,IAMP,IRET)
      CALL GET(IFRAME,POS,INC,IAMP,IRET)
      IF(NTAPE.EQ.2) CALL GET2(IFRAME,POS,INC,IAMP,IRET)
C      ASK FOR OUTPUT FILE TO BE SORTED
C      PRIMARY FIELD IS GRID NUMBER
C      SECONDARY FIELD IS FRAME NUMBER
      CALL SORTIT
C      PROCESSING TO STATEMENT 11 READS SORTED DATA
C      INITIALIZE SOME SWITCHES
      ISTOP1=0
      IRET=0
C      READ IN THE FIRST RECORD
      CALL GETS(IGRID,IFRAME,X,Y,R,T,INC,IAMP,IRET)
C      MAINTAIN A COPY OF THE DATA FRAMES
      8 CALL PUT(IGRID,IFRAME,X,Y,R,T,INC,IAMP,IRET)
C      IF WE ARE TO STOP (END OF FILE) GO TO 11
      IF(ISTOP1.EQ.1) GO TO 11
C      OTHERWISE WE HAVE THE FIRST FRAME BELONGING TO SOME GRID
      NCASE=1
C      SAVE THIS GRID NUMBER
      IGRID1=IGRID
C      ONLY OBSERVATION SO FAR IS CERTAINLY MINIMUM AND MAXIMUM
      DO 4 I=1,104
        IMIN(I)=IAMP(I)
      4 IMAX(I)=IAMP(I)
C      READ ANOTHER FRAME
      6 CALL GETS(IGRID,IFRAME,X,Y,R,T,INC,IAMP,IRET)
C      WAS IT END OF FILE INSTEAD? YES, GO TO 10
      IF(IRET.NE.0) GO TO 10
C      HAVE WE CHANGED GRID NUMBERS? YES, GO TO 7
      IF(IGRID.NE.IGRID1) GO TO 7
C      NO, SAFE TO OUTPUT THE FRAME NOW
      CALL PUT(IGRID,IFRAME,X,Y,R,T,INC,IAMP,IRET)
C      UP THE OBSERVATION COUNT FOR THIS GRID
      NCASE=NCASE+1
C      FIND NEW MAX AND MIN FOR VELOCITY CELLS
      DO 5 I=1,104
        IF(IAMP(I).LT.IMIN(I)) IMIN(I)=IAMP(I)
      5 IF(IAMP(I).GT.IMAX(I)) IMAX(I)=IAMP(I)
C      KEEP READING
      GO TO 6
C      NOTHING TO RECORD IF ONLY ONE OBSERVATION
      7 IF(NCASE.LT.2) GO TO 8
      DO 9 I=1,104
        OTHERWISE OBTAIN THE VARIATIONS
        J=(IMAX(I)-IMIN(I))+1
C      AND KEEP A COUNT OF THE OBSERVED VARIATION
        IVAR(I)=J-1
      9 IFREQ(J,I)=IFREQ(J,I)+1
C      PUT OUT THE VARIATION INFORMATION BEHIND FRAMES FOR THIS GRID
      CALL PUT(IGRID1,0,0,0,0,0,0,NCASE,IVAR,0)
C      AND GO PUT OUT FRAME THAT SIGNED GRID CHANGE
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      GO TO 8
C     PROCESS END OF FILE AS A GRID CHANGE, BUT DO NOT READ AGAIN
10  ISTOP1=1
      GO TO 7
C     FIND THE TOTAL NUMBER OF OBSERVATIONS
C     NOTE THAT ANY VARIATION GETS RECORDED SOMEWHERE, EVEN ZERO VARIATION
11  ISUM=0
      DO 12 I=1,256
12  ISUM=ISUM+IFREQ(I,1)
C     NOW FIND THE COUNT THAT GOES WITH USER-SELECTED CUTOFF POINT
      ISUM=((ISUM*IPERCT)/100)+1
C     USE THIS TO LOCATE THE CUT POINTS FOR EACH VELOCITY CELL
C     AND SAVE THEM FOR LATER
      DO 14 I=1,104
      JSUM=0
      DO 13 J=1,256
      JSUM=JSUM+IFREQ(J,I)
      IF(JSUM.GE.ISUM) GO TO 14
13  CONTINUE
14  I99(I)=J
C     PROCESSING TO STATEMENT 17 READS SORTED DATA AGAIN
C     AND RECORDS ALL INSTANCES OF CUTOFF POINTS EXCEEDED
C     INITIALIZE SWITCHES
      IRET=0
      IKEEP=0
C     READ A FRAME
15  CALL GETS(IGRID1,IFRAME,X,Y,R,T,NCASE,IVAR,IRET)
C     END OF FILE? YES, GO TO 17
      IF(IRET.NE.0) GO TO 17
C     IS IT A VARIATION RECORD? NO, GO READ AGAIN
      IF(IFRAME.NE.0) GO TO 15
C     YES, LOOK AT EACH CELL
      DO 16 I=1,104
      J=IVAR(I)
C     VARIATION LESS THAN CUTOFF IS IGNORED
      IF(J.LT.I99(I)) GO TO 16
C     BUMP COUNTER
      IKEEP=IKEEP+1
C     STORAGE EXCEEDED? YES, GO HANDLE IT AT 64
      IF(IKEEP.GT.20000) GO TO 64
C     RECORD GRID VALUE
      IDATA(IKEEP,1)=IGRID1
C     AND CELL NUMBER
      IDATA(IKEEP,2)=I
C     COUNT ONE MORE OVERAGE
      ICOUNT(I)=ICOUNT(I)+1
C     AND SUM THE OVERAGES
      IOVER(I)=IOVER(I)+J-I99(I)
16  CONTINUE
C     GO GET ANOTHER FRAME
      GO TO 15
C     SIGNAL FOR CLOSE FILE
64  IRET=1
      CALL GETS(IGRID1,IFRAME,X,Y,R,T,NCASE,IVER,IRET)

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56 CALL ANSTR(16,LINE14)
   GO TO 65
C   FIND GREATEST OVERAGE FOR SCALING OF DISPLAY
17 JMAX=0
   DO 18 I=1,104
18 IF(IOVER(I).GT.JMAX) JMAX=IOVER(I)
C   PUT DESCRIPTIVE INFO ON NEW SCREEN
   CALL NEWPAG
   CALL ANSTR(41,LINE1)
   CALL NEWLIN
   CALL ANSTR(LENGTH,ITITLE)
   CALL MOVABS(600,765)
   CALL ANSTR(45,LINE11)
   CALL MOVABS(600,740)
   CALL ANSTR(38,LINE2)
C   DISPLAY DIGITS FOR HORIZONTAL AXIS
   DO 19 I=1,19
   LINE3(2)=48
   IF((I-(I/2)*2).NE.0) LINE3(2)=53
   LINE3(1)=(I/2)+48
   IX=78+45*(I-1)
   CALL MOVABS(IX,0)
19 CALL ANSTR(2,LINE3)
C   DRAW LINES VERTICALLY FOR EACH CELL REPRESENTING OVERAGE
   DO 20 I=1,104
   IX=49+9*(I-1)
   CALL MOVABS(IX,15)
   IY=16+(750*IOVER(I))/JMAX
20 CALL DRWABS(IX,IY)
C   DISPLAY DIGITS FOR VERTICAL AXIS AND DRAW DECTILE LINES
   DO 25 I=1,10
   II=((I-1)*JMAX)/10
   IF(II.GT.9999) GO TO 22
   CALL DIGITS(II,LINE3,4)
   GO TO 24
22 DO 23 JJ=1,4
23 LINE3(JJ)=42
24 IY=15+(I-1)*75
   CALL MOVABS(0,IY)
   CALL ANSTR(4,LINE3)
   CALL MOVABS(47,IY)
25 CALL DRWABS(978,IY)
C   WAIT FOR USER TO SIGNAL WITH A "D"
26 CALL BELL
   CALL TINSTR(1,LINE3)
   IF(LINE3(1).NE.68) GO TO 26
C   NOW GET A CLEAR SCREEN
49 CALL NEWPAG
C   LET USER DECIDE WHAT TO DO
   CALL ANSTR(58,LINE4)
28 CALL BELL
   CALL TINSTR(3,LINE3)
C   CAN GO TO STOP
   IF(LINE3(1).EQ.83) GO TO 50

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C   CAN GO CHANGE GRID SIZE AND/OR PERCENT
    IF(LINE3(1).EQ.71) GO TO 65
C   OTHERWISE GET SELECTED VELOCITY
    DO 27 I=1,3
27  LINE3(I)=LINE3(I)-48
    ICELL=100*LINE3(1)+10*LINE3(2)+LINE3(3)
    IF(ICELL.LE.0.OR.ICELL.GT.104) GO TO 28
C   PUT INTO LINE6
    JCELL=ICELL
    CALL DIGITS(JCELL,LINE6(34),3)
C   FIND ALL OVERAGES FOR THIS CELL
    NSTORE=0
    DO 32 I=1,IKEEP
    IF(IDATA(I,2).NE.ICELL) GO TO 32
    NSTORE=NSTORE+1
    IF(NSTORE.GT.20000) GO TO 66
    JKEEP1(NSTORE)=I
32  CONTINUE
C   PUT DESCRIPTIVE INFO ON NEW SCREEN
    CALL NEWPAG
    CALL MOVABS(600,765)
    CALL ANSTR(48,LINE6)
    CALL MOVABS(600,750)
    CALL ANSTR(LENGTH,ITITLE)
    CALL MOVABS(600,735)
    CALL ANSTR(45,LINE11)
C   DRAW THE RADIUS AND ANGLE LOCATION GRID
    DO 34 I=1,19
    IX=ISPOTX(1,I)
    IY=ISPOTY(1,I)
    CALL MOVABS(IX,IY)
    IX=ISPOTX(11,I)
    IY=ISPOTY(11,I)
34  CALL DRWABS(IX,IY)
    DO 45 I=2,11
    IX=ISPOTX(I,1)
    IY=ISPOTY(I,1)
    CALL MOVABS(IX,IY)
    DO 45 J=2,19
    IX=ISPOTX(I,J)
    IY=ISPOTY(I,J)
45  CALL DRWABS(IX,IY)
    DO 42 I=1,11
    II=(I-1)*50
    IX=ISPOTX(I,1)-40
    IY=ISPOTY(I,1)
    CALL MOVABS(IX,IY)
    CALL DIGITS(II,LINE3,3)
42  CALL ANSTR(3,LINE3)
    DO 35 I=1,19
    II=5*(I-1)
    IX=ISPOTX(11,I)+10
    IY=ISPOTY(11,I)+10
    CALL MOVABS(IX,IY)

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CALL DIGITS(11,LINE3,2)
35 CALL ANSTR(2,LINE3)
C  DISPLAY THE POINTS ON THE RADIUS AND ANGLE GRID
    DD 36 11=1,NSTORE
    J=JKEEP1(11)
    JGRID=IDATA(J,1)
    JT=(JGRID-1)/ISPAN
    JR=JGRID-ISPAN*JT
    JR=JR*ILNGTH
    JT=JT*IWIDTH
    TJT=TJT*.0174533
    JX=JR*COS(TJT)
    JY=JR*SIN(TJT)
    JY=(JY*3)/2
    JX=(JX*3)/2
    JY=JY+40
    JX=JX+20
    CALL MOVABS(JY,JX)
    LINE3(1)=46
    CALL ANSTR(1,LINE3)
36 CONTINUE
C  WAIT FOR USER TO SIGNAL FINISHED
    CALL MOVABS(825,15)
    CALL ANSTR(2,LINE5)
37 CALL BELL
    CALL TINSTR(1,LINE3)
    IF(LINE3(1).NE.68) GO TO 37
C  LET USER DECIDE WHAT TO DO AGAIN
33 CALL NEWPAG
    CALL ANSTR(76,LINE7)
21 CALL BELL
    CALL TINSTR(1,LINE3)
C  CAN CHOOSE TO STOP
    IF(LINE3(1).EQ.83) GO TO 50
C  CAN SELECT ANOTHER VELOCITY
    IF(LINE3(1).EQ.86) GO TO 49
C  CAN CHANGE GRID SIZE AND/OR PERCENTAGE
    IF(LINE3(1).EQ.71) GO TO 65
C  OR CAN GO TO 3-D ROUTINES
    IF(LINE3(1).NE.77) GO TO 21
C  GET LIMITS FOR REGION FROM USER
    CALL NEWPAG
    LINE12(7)=MINI(1)
    LINE12(8)=MINI(2)
    LINE12(9)=MINI(3)
    CALL ANSTR(52,LINE12)
    CALL BELL
    CALL TINSTR(3,LINE3)
    IRMIN=100*(LINE3(1)-48)+10*(LINE3(2)-48)+LINE3(3)-48
    CALL NEWLIN
    LINE12(7)=MAXI(1)
    LINE12(8)=MAXI(2)
    LINE12(9)=MAXI(3)
    CALL ANSTR(52,LINE12)

```

```

CALL BELL
CALL TINSTR(3,LINE3)
IRMAX=100*(LINE3(1)-48)+10*(LINE3(2)-48)+LINE3(3)-48
CALL NEWLIN
LINE13(7)=MINI(1)
LINE13(8)=MINI(2)
LINE13(9)=MINI(3)
CALL ANSTR(50,LINE13)
CALL BELL
CALL TINSTR(2,LINE3)
ITMIN=10*(LINE3(1)-48)+LINE3(2)-48
CALL NEWLIN
LINE13(7)=MAXI(1)
LINE13(8)=MAXI(2)
LINE13(9)=MAXI(3)
CALL ANSTR(50,LINE13)
CALL BELL
CALL TINSTR(2,LINE3)
ITMAX=10*(LINE3(1)-48)+LINE3(2)-48
C   HAND CONTROL TO 3-D DISPLAY PACKAGE
    CALL NEWPAG
    CALL MENU(ISTART,T1,ISTOP,T2,ISCAN,ISCAN1,IDAY,IRUN,NTAPE,ITAPES,
1    ICCELL,IRMIN,IRMAX,ITMIN,ITMAX)
    CALL NEWPAG
C   GO LET USER MAKE A CHOICE AGAIN
    GO TO 33
C   A LA CASA
50  CALL FINITT(0,780)
    STOP
    END

```


SUBROUTINE GET

```

GET START C
  STM 14,12,12(13)
  LR 12,15
  USING GET,12
  ST 13,SAVE+4
  LR 15,13
  LA 13,SAVE
  ST 13,8(,15)
  LM 2,6,0(1)
  DC 0(4,6),0(6)
  BC 7,END
SW BC 0,LATER
  MVI SW+1,X'FC'
  OPEN IN
  GET IN
  LM 14,15,20(1)
  SRDL 14,4
  SRL 15,4
  ST 15,TIME
LATER GET IN
  XC 0(4,6),0(6)
  LA 7,32
  LA 6,4
  LA 8,1
  BAL 9,FIXED
  LR 2,3
  LA 8,4
  LA 6,4
  BAL 9,FLOAT
  LM 14,15,0(1)
  SRDL 14,4
  SRL 15,4
  S 15,TIME
  ST 15,0(,4)
  LA 1,4(,1)
  LR 2,5
  LA 8,104
  LA 6,28
  BAL 9,FIXED
RETURN L 13,SAVE+4
  LM 14,12,12(13)
  BCR 15,14
END CLOSE IN
  MVI 3(6),X'FF'
  MVI SW+1,X'00'
  BC 15,RETURN
FIXED LM 14,15,0(1)
  SLDL 14,0(6)
  ST 14,0(,2)
  LA 2,4(,2)
  LA 1,4(,1)
  BCT 8,INCL
  BCR 15,9
INCL LA 6,4(,6)

```

```

P
R
D
L
Q
G
U
E
GET PARAMETERS
USER SEDING CLOSE SIGNAL?
YES, HANDLE IT
ENTER SWITCH
SET SWITCH ON
OPEN FILE FOR INPUT
GET RUN HEARER RECORD
PICK UP CLOCK VALUE
ISOLATE FRACTION BITS
IN REG 15
AND SAVE FOR LATER USE
GET A FRAME
SIGNAL RECORD AVAILABLE
SET SHIFT MAXIMUM AMOUNT
SHIFT LEFT 4 BITS
ONE ITEM
GO TO FIXED CONVERSION
SET OUTPUT POINTER
FOUR ITEMS
SHIFT LEFT 4 BITS
GO TO FLOATING POINT CONVERSION
GET FRAME CLOCK VALUE
ISOLATE FRACTION BITS
IN REG 15
SUBTRACT INITIAL FRACTION BITS
STORE TICKS SINCE RUN STARTED
BUMP INPUT POINTER
SET OUTPUT POINTER
104 ITEMS
SHIFT LEFT 28 BITS
GO TO FIXED CONVERSION
RETURN
TO
USER
CLOSE FILE
SET SIGNAL ON
CLEAR SWITCH
RETURN
PICK UP DOUBLE WORD CONTAINING ITEM
ISOLATE IT
PUT IT DOWN
BUMP OUTPUT
BUMP INPUT
CONTINUE FOR NUMBER OF ITEMS
RETURN TO USER
INCREASE SHIFT BY 4

```

BAL 11,MORE
BC 15,FIXED
FLOAT LM 14,15,0(1)
SLDL 14,0(6)
SRDL 14,23
N 14,LAST7
LR 10,14
LA 10,3(,10)
SRL 10,2
LR 11,10
LA 11,64(,11)
SLL 10,2
SR 10,14
SRL 15,0(10)
LR 14,11
SLDL 14,24
LTR 15,15
BC 11,*+8
A 14,ONE
ST 14,0(,2)
LA 2,4(,2)
LA 1,4(,1)
BCT 8,INC2
BCR 15,9
INC2 LA 6,4(,6)
BAL 11,MORE
BC 15,FLOAT
MORE CR 6,7
BCR 7,11
LA 1,4(,1)
LA 6,0
BCR 15,11
SAVE DS 18F
TIME DS F
LAST7 DC X'0000007F'
ONE DC X'00000001'
IN DCB DSORG=PS,MACRF=GL,DDNAME=IN,EODAD=END
END GET

AND SET UP FOR MORE
CARRY OIN
PICK UP ITEM
ISOLATE IT
ISOLATE FRAMTION
ISOLATE EXPONENT
SAVE THIS
BUP TO NEXT
MULTIPLE OF FOUR
AND SAVE THIS
EXCESS 64 NOTATION
MULTIPLE OF 4
GET DIFFERENCE
AS SHIFT AMOUNT
PUT THIS ASIDE
JOIN WITH FRACTION
ROUND UP?
NO
YES, ADD ONE
AND PUT THE NUMBER DOWN
BUMP OUTPUT POINTER
BUMP INPUT POINTER
CONTINUE FOR ANOTHER ITEM
OTHERWISE, RETURN TO USER
INCREASE SHIFT AMOUNT
CHECK FOR TOO MUCH
AND CONTINUE
ARE WE AT 32 BITS?
NO, CONTINUE
YES, SKIP ONE FULLWORD
AND SHIFT 0 BITS
RETURN TO USER

SUBROUTINE GETS

GETS	START 0	P
	STM 14,12,12(13)	R
	LR 12,15	O
	USING GETS,12	L
	ST 13,SAVE+4	O
	LR 15,13	G
	LA 13,SAVE	U
	ST 13,8(,15)	E
	LM 2,10,C(1)	PICK UP THE PARAMETERS
	OC 0(4,10),0(10)	USER SENDS CLOSE SIGNAL?
	BC 7,EODAD	YES, HANDLE IT
SW	BC 0,LATER	NO, ENTER SWITCH
	MVI SW+1,X'FO'	SET SWITCH ON
	OPEN (DISK,INPUT)	OPEN FILE TO BE READ
LATER	GET DISK	GET A RECORDS
	XC 0(4,10),0(10)	SIGNAL RECORD OBTAINED
	MVC 0(4,2),0(1)	GRID NUMBER
	MVC 0(4,3),4(1)	FRAME NUMBER
	MVC 0(4,4),8(1)	X
	MVC 0(4,5),12(1)	Y
	MVC 0(4,6),16(1)	R
	MVC 0(4,7),20(1)	T
	MVC 0(4,8),24(1)	CLOCK TICKS
	LA 1,28(,1)	POINT AT ARRAY START
	LA 10,104	104 ENTRIES
AMP	MVC 3(1,9),0(1)	ONE BYTE EZCH
	XC 0(3,9),0(9)	CLEZR OUT JUNK
	LA 1,1(,1)	BUMP
	LA 9,4(,9)	BUMP
	BCT 10,AMP	CONTINUE
RETURN	L 13,SAVE+4	RETURN
	LM 14,12,12(13)	TO
	BCR 15,14	USER
EODAD	OI 3(10),X'FF'	SET NO RECORD SIGNAL ON
	MVI SW+1,X'CO'	CLEAR SWITCH
	CLOSE DISK	CLOSE FILE
	CLC DISK+40(8),=C'SORTIN	ALTERNATE
	BC 8,PUTINS	DDNAMES
	MVC DISK+40(8),=C'SCERTIN	'SORTIN'
	BC 15,RETURN	AND
PUTINS	MVC DISK+40(8),=C'INS	INS
	BC 15,RETURN	IN PAIRS
SAVE	DS 18F	
DISK	DCB DSORG=PS,MACRF=GL,DDNAME=INS,EODAD=EODAD,BLKSIZE=12936, X	
	LRECL=132,RECFM=FB	
END	GETS	

SUBROUTINE SORTIT

C-21

SORTIT START O	P
STM 14,12,12(13)	R
LR 12,15	O
USING SORTIT,12	L
ST 13,SAVE+4	O
LR 15,13	G
LA 13,SAVE	U
ST 13,8(,15)	E
LINK EP=IERRC000,PARAM=(PARAM+2),VL=1	LINK TO SORTER
L 13,SAVE+4	RETURN
LM 14,12,12(13)	TO
BCR 15,14	USER
DS CF	
PARAM DC X'00'	
DC AL3(SORT-SORTA)	
SORTA DC A(SORT)	
DC A(RECORD-1)	
DC A(RECORD)	
DC A(END-1)	
DC A(C)	
DC A(O)	
DC X'FF0CC1D7'	
SORT DC C' SORT FIELDS=(1,4,BI,A,5,4,BI,A),SIZE=E15100	
RECORD DC C' RECORD TYPE=F,LENGTH=(132)	
END EQU *	
SAVE DS 18F	
END SORTIT	

SUBROUTINE PUT

PUT	START 0	P	
	STM 14,12,12(13)	R	
	LR 12,15	O	
	USING PUT,12	L	
	ST 13,SAVE+4	O	
	LR 15,13	G	
	LA 13,SAVE	U	
	ST 13,8(,15)	E	
	LM 2,10,C(1)	PICK UP PARAMETERS	
SW	BC 0,LATER	ENTER SWITCH	
	MVI SW+1,X'F0'	SET SWITCH ON	
	OPEN (OUT,OUTPUT)	OPEN FILE TO BE WRITTEN	
LATER	L 10,0(,10)	USER SENDS	
	LTR 10,10	CLOSE SIGNAL?	
	BC 7,CLOSE	YES, HANDLE IT	
	LA 1,BUFFER	POINT TO RECORD AREA	
	MVC 0(4,1),0(2)	GRID NUMBER	
	MVC 4(4,1),0(3)	FRAME NUMBER	
	MVC 8(4,1),0(4)	X	
	MVC 12(4,1),0(5)	Y	
	MVC 16(4,1),0(6)	R	
	MVC 20(4,1),0(7)	T	
	MVC 24(4,1),0(8)	CLOCK TICKS	
	LA 1,28(,1)	POINT AT ARRAY OUTPUT AREA	
	LA 10,104	104 ELEMENTS	
LOOP	MVC 0(1,1),3(9)	TAKE ONE	
	LA 1,1(,1)	BUMP	
	LA 9,4(,9)	BUMP	
	BCT 10,LOOP	CONTINUE	
	PUT OUT,BUFFER	WRITE OUT RECORD	
RETURN	L 13,SAVE+4	RETURN	
	LM 14,12,12(13)	TO	
	BCR 15,14	USER	
CLOSE	CLOSE OUT	CLOSE FILE	
	MVI SW+1,X'00'	CLEAR SWITCH	
	BC 15,RETURN	RETURN	
SAVE	DS 18F		
BUFFER	DS 33F		
OUT	DCB DSORG=PS,DDNAME=SORTIN,MACRF=PM,RECFM=FB,LRECL=132,		X
	BLKSIZE=12936		
END	PUT		

SUBROUTINE DIGITS

```
      SUBROUTINE DIGITS(JVAL,LINE,N)
C      SUBROUTINE TO PRODUCE TEKTRONIX PRINTABLE DIGITS FROM A NUMBER
C      JVAL IS INTEGER VALUE WITH NO MORE THAN 6 DIGITS.  POSITIVE.
C      LINE IS THE ARRAY TO RECEIVE RESULTS
C      N IS THE NUMBER OF DIGITS DESIRED
      DIMENSION LINE(6)
C      FORM FIRST DIVISOR
      INDEX=10**(N-1)
C      LOOP ONCE FOR EACH DIGIT
      DO 1 I=1,N
C      GET QUOTIENT
      IF=JVAL/INDEX
C      NUMBER REDUCED TO REMAINDER
      JVAL=JVAL-IF*INDEX
C      WE HAVE PRINTABLE TEKTRONIX INTEGER
      LINE(I)=IF+48
C      REDUCE DIVISOR FOR NEXT TIME
1  INDEX=INDEX/10
C      ALL DONE
      RETURN
      END
```

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SUBROUTINE MENU

```

C *****
C
C      SUBROUTINE  MENU
C
C      THIS SUBROUTINE GIVES USER A CHOISE OF "SCAN" DISPLAY
C      (RADIUS X ANGLE X EITHER VELOCITY OR AMPLITUDE) OR
C      "RAY" DISPLAY (RADIUS X VELOCITY X AMPLITUDE).
C *****
C
      SUBROUTINE MENU( ISTART, T1, ISTOP, T2, ISCAN, ISCAN1, IDAY,
1          IRUN, NTAPE, ITAPES, ICELL, IRMIN, IRMAX,
2          ITMIN, ITMAX )
      DIMENSION ISTART(60), T1(60), ISTOP(60), T2(60), ITAPES(2)
      MTAPE=NTAPE
1  CALL  MOVABS( 80, 690 )
C      DISPLAY CHOISES
      CALL  AOUTST( 7, 'OPTIONS' )
      CALL  MOVABS( 100, 660 )
      CALL  AOUTST( 45, '1 ... THREE DIMENSIONAL ONE FULL SCAN DISPLAY' )
      CALL  MOVABS( 100, 630 )
      CALL  AOUTST( 39, '2 ... THREE DIMENSIONAL ONE RAY DISPLAY' )
      CALL  MOVABS( 100, 600 )
      CALL  AOUTST( 15, '9 ... TERMINATE' )
C      ENTER OPTION
90  CALL  AINST( 1, IOPT )
      CALL  CORE( IOPT, 1 )
      READ ( 99, 901 ) IOPTN
901  FORMAT ( I1 )
      IF ( IOPTN .EQ. 9 ) GO TO 999
      IF ( IOPTN .NE. 1 ) GO TO 200
C      USER CHOSE "SCAN" DISPLAY OPTION
      CALL  AOUTST ( 36, 'ENTER STARTING SCAN NUMBER(2 DIGITS)' )
      CALL  AINST(2, ISCN)
      CALL  CORE(ISCN,2)
      READ (99,902) ISCN
902  FORMAT(I2)
      DO 120 NFRM=ISCN, ISCAN
      IF (MTAPE.EQ.2.AND.NFRM.GE.ISCAN1) NTAPE=3
      CALL  DISPLY( ISTART, T1, ISTOP, T2, ISCAN, ISCAN1, IDAY, IRUN,
1          NTAPE, ITAPES, ICELL, NFRM, ITMIN, ITMAX )
120  CONTINUE
      GO TO 1
C      OPTION MUST BE 1, 2 OR 9
200  IF ( IOPTN .NE. 2 ) GO TO 90
C      USER CHOSE "RAY" DISPLAY OPTION
520  CALL  ERASE
      CALL  MOVABS( 100, 750 )
      CALL  AOUTST( 12, 'ENTER SCAN #' )
      CALL  AINST( 2, NFRM )
      CALL  CORE ( NFRM , 2 )
      READ ( 99, 902 ) NFRM
      IF ( NFRM .GT. NSCAN ) GO TO 520
      CALL  ERASE

```

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```
CALL      RAY( ISTART, T1, ISTOP, T2, ISCAN, ISCAN1, IDAY, IRUN,  
1          NTAPE, ITAPES, ICELL, NFRM, ITMIN, ITMAX )  
GO TO 1  
999 CALL FINITT( C, O )  
STOP  
END
```

SUBROUTINE DISPLY

```
C *****
C
C      SUBROUTINE  DISPLAY
C
C      THIS SUBROUTINE DISPLAYS ONE "SCAN" OF DATA IN THREE
C      DIMENSIONAL FORM
C *****
C
C      SUBROUTINE DISPLY( NFRM1, ANG1, NFRM2, ANG2, NSCAN, ISCAN1, IDAY,
1      IRUN, NTAPE, ITAPES, ICELL, ISCAN, ITMIN, ITMAX)
C      DIMENSION NFRM1(60), ANG1(60), NFRM2(60), ANG2(60), ITAPES(2)
C      DIMENSION XB(1000), XW(1000)
C      DIMENSION XV(1000), NF(100)
C      DIMENSION IAMP(104), XY(4), IN(2)
C      DIMENSION XX(1000), XA(1000), NX(100), TABLE(100)
C      DIMENSION ZZ(100)
C      DIMENSION Z(100,100), NGRID(4)
C      DIMENSION XA1(1000),XV1(1000),XW1(1000)
C      COMMON / HARP / ICAL,NSCOPE
C      DIMENSION ANG(1000), ANGAVE(50)
C      DIMENSION II(50)
C      DOUBLEPRECISION LFRM1, AANG1, LFRM2, AANG2, LTAPE1, LTAPE2
C      DOUBLEPRECISION ANGAV(50), TABLE2(50)
C      DOUBLEPRECISION ZAVE2, ZHIGH2
C      NTAPE3 = 0
C      ISAME = 0
C      ANGLES GIVEN ON NASA TAPE ARE ONE HALF OF ACTUAL ANGLE SIZES.
C      AANG1 = ANG1(ISCAN) * 2.0
C      AANG2 = ANG2(ISCAN) * 2.0
C      CONVERT NUMERICAL FORM TO CHARACTER FORM FOR DISPLAY
C      WRITE ( 2, 962 ) NFRM1(ISCAN), AANG1, NFRM2(ISCAN),
1      AANG2, IDAY, IRUN, ITAPES, ISCAN, ICELL
962  FORMAT ( I6, F6.3, I6, F6.3, I3, I2, 2I5, I2, I3 )
C      REWIND 2
C      READ ( 2, 963 ) LFRM1, AANG1, LFRM2, AANG2, LDAY, LRUN, LTAPE1,
1      LTAPE2, LSCAN, LCELL
963  FORMAT ( 4A6, A3, A2, 2A5, A2, A3 )
C      REWIND 2
C      1 CALL ERASE
C      DISPLAY INFORMATIONS FOR THIS RUN
C      CALL CHRISZ(2)
C      CALL MOVABS( 100, 750 )
C      CALL ADUTST( 32, 'NASA PROJECT DUST DEVIL DAY ' )
C      CALL ADUTST( 3, LDAY )
C      CALL ADUTST( 10, ' RUN # ' )
C      CALL ADUTST( 2, LRUN )
C      IF (NTAPE.EQ.3) CALL ADUTST(16, ' TAPE 2 OF 2-' )
C      IF (NTAPE.EQ.2) CALL ADUTST( 16, ' TAPE 1 OF 2-' )
C      IF ( NTAPE .EQ. 1 ) CALL ADUTST( 13, ' TAPE # 1-' )
C      IF (NTAPE .EQ.3) CALL ADUTST (5,LTAPE2)
C      IF (NTAPE.LE.2) CALL ADUTST (5,LTAPE1)
C      CALL CHRISZ(3)
C      CALL MOVABS ( 30, 725 )
```



```
CALL ADUTST( 7, 'SCAN # ' )
CALL ADUTST( 2, 'LSCAN ' )
CALL ADUTST( 13, 'FRAME # ' )
CALL ADUTST( 6, 'LFRM1 ' )
CALL ADUTST( 9, 'ANGLE ' )
CALL ADUTST( 6, 'AANG1 ' )
CALL ADUTST( 18, 'TO FRAME # ' )
CALL ADUTST( 6, 'LFRM2 ' )
CALL ADUTST( 9, 'ANGLE ' )
CALL ADUTST( 6, 'AANG2 ' )
CALL ADUTST( 25, 'CRITICAL AMP AT CELL ' )
CALL ADUTST( 3, 'LCELL ' )
CALL MOVABS( 80, 690 )
```

C

DISPLAY OPTIONS FOR UNTRANSLATED DATA

```
CALL ADUTST( 7, 'OPTIONS' )
CALL MOVABS( 100, 660 )
IF ( IDAY .GE. 238 ) GO TO 605
CALL ADUTST( 8, '11 ... I' )
CALL CHRISZ(4)
CALL ADUTST( 3, 'MAX' )
CALL CHRISZ(3)
CALL ADUTST( 15, 'R, A DISPLAY' )
CALL MOVABS( 100, 630 )
CALL ADUTST( 37, '12 ... I, R, A DISPLAY AT GIVEN V' )
CALL MOVABS( 100, 600 )
CALL ADUTST( 39, '21 ... V, R, A DISPLAY (VELOCITY AT I' )
CALL CHRISZ(4)
CALL ADUTST( 3, 'MAX' )
CALL CHRISZ(3)
CALL ADUTST( 1, 'I' )
CALL MOVABS( 100, 570 )
CALL ADUTST( 8, '22 ... V' )
CALL CHRISZ(4)
CALL ADUTST( 3, 'MAX' )
CALL CHRISZ(3)
CALL ADUTST( 13, 'R, A DISPLAY' )
CALL MOVABS( 100, 540 )
CALL ADUTST( 12, '31 ... V * I' )
CALL CHRISZ(4)
CALL ADUTST( 3, 'MAX' )
CALL CHRISZ(3)
CALL ADUTST( 15, 'R, A DISPLAY' )
CALL MOVABS( 100, 510 )
CALL ADUTST( 20, '55 ... "RAY" DISPLAY' )
CALL MOVABS( 100, 480 )
CALL ADUTST( 22, '99 ... GO TO NEXT DATA' )
CALL CHRISZ(4)
CALL MOVABS( 100, 450 )
CALL ADUTST( 15, 'MAX ... MAXIMUM' )
CALL MOVABS( 100, 425 )
CALL ADUTST( 15, 'MIN ... MINIMUM' )
CALL MOVABS( 100, 400 )
CALL ADUTST( 15, 'I ... INTENSITY' )
CALL MOVABS( 100, 375 )
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CALL ADUTST ( 14, 'V ... VELOCITY' )
CALL MOVABS( 100, 350 )
CALL ADUTST ( 12, 'R ... RADIUS' )
CALL MOVABS( 100, 325 )
CALL ADUTST ( 11, 'A ... ANGLE' )
CALL CHRISZ(3)
CALL MOVABS( 100, 280 )
505 CALL ADUTST( 13, 'ENTER OPTION' )
C   ENTER OPTION FOR UNTRANSLATED DATA
CALL AINST( 2, IOPTN )
CALL CORE ( IOPTN, 2 )
READ ( 99, 902 ) IOPTN
IF ( IOPTN .EQ. 55 ) GO TO 710
IOP=IOPTN
GO TO 506
C   DISPLAY OPTIONS FOR TRANSLATED DATA
605 CALL ADUTST( 9, '111 ... I' )
CALL CHRISZ(4)
CALL ADUTST( 3, 'MAX' )
CALL CHRISZ(3)
CALL ADUTST( 42, ' , R, A DISPLAY (PART 1 OF 2, CELL 52 - 1)' )
CALL MOVABS( 100, 630 )
CALL ADUTST( 43, '112 ... PART 2 OF OPTION 111, CELL 53 - 104' )
CALL MOVABS ( 100, 600 )
CALL ADUTST( 44, '121 ... I, R, A DISPLAY AT GIVEN V CELL' )
CALL MOVABS ( 100, 570 )
CALL ADUTST( 40, '211 ... V, R, A DISPLAY (VELOCITY AT I' )
CALL CHRISZ(4)
CALL ADUTST( 31, 'MAX. PART 1 OF 2, CELL 52 - 1 ' )
CALL CHRISZ(3)
CALL ADUTST( 1, ' )' )
CALL MOVABS( 100, 540 )
CALL ADUTST( 8, '212 ... ' )
CALL CHRISZ(4)
CALL ADUTST( 35, 'PART 2 OF OPTION 211, CELL 53 - 104' )
CALL CHRISZ(3)
CALL MOVABS( 100, 510 )
CALL ADUTST( 9, '221 ... V' )
CALL CHRISZ(4)
CALL ADUTST( 3, 'MAX' )
CALL CHRISZ(3)
CALL ADUTST( 13, ' , R, A DISPLAY' )
CALL CHRISZ(4)
CALL ADUTST(29, ' , (PART 1 OF 2, CELL 52 - 1 )' )
CALL CHRISZ(3)
CALL MOVABS( 100, 480 )
CALL ADUTST( 8, '222 ... ' )
CALL CHRISZ(4)
CALL ADUTST(35, 'PART 2 OF OPTION 221, CELL 53 - 104' )
CALL CHRISZ(3)
CALL MOVABS( 100, 450 )
CALL ADUTST( 13, '311 ... V * I' )
CALL CHRISZ(4)
CALL ADUTST( 3, 'MAX' )

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CALL CHRSLZ(3)
CALL ADUTST( 15, ' , R, A  DISPLAY' )
CALL CHRSLZ(4)
CALL ADUTST( 29, ' (PART 1 OF 2, CELL 52 - 1 )' )
CALL CHRSLZ(3)
CALL MOVABS( 100, 420 )
CALL ADUTST( 8, '312 ... ' )
CALL CHRSLZ(4)
CALL ADUTST(35, 'PART 2 OF OPTION 311, CELL 53 - 104' )
CALL MOVABS( 100, 360 )
CALL CHRSLZ(3)
CALL ADUTST( 28, '555 OR 55 ... "RAY"  DISPLAY' )
CALL MOVABS( 100, 330 )
CALL ADUTST(29, '999 OR 99 ... GO TO NEXT DATA' )
CALL MOVABS( 100, 300 )
CALL ADUTST( 13, 'ENTER  OPTION' )
C      ENTER OPTION FOR TRANSLATED DATA
CALL AINST( 3, IOPTN )
CALL CORE ( IOPTN, 3 )
READ ( 99, 903 ) IOPTN
IOP=IOPTN/10
IF ( IOPTN .EQ. 55 ) GO TO 710
IF ( IOPTN .EQ. 550 ) GO TO 710
IF ( IOPTN .EQ. 555 ) GO TO 710
506 IF(IOP.NE.22) GO TO 507
CALL MOVABS( 100, 260 )
CALL ADUTST( 43, 'ENTER AMP  FOR  MAX  VELOCITY...(3 DIGITS)' )
C      ENTER AMPLITUDE THRESHOLD
CALL AINST( 3, IVAMP )
CALL CORE ( IVAMP, 3 )
READ ( 99, 903 ) IVAMP
507 CONTINUE
C      IF OPTION # IS 99 OR 999  RETURN TO CALLING PROGRAM
IF ( IOPTN .EQ. 99 ) RETURN
IF ( IOPTN.EQ.999) RETURN
IF (IOPTN.EQ.990) RETURN
CALL ERASE
C      SELECT TAPE  IF MORE THAT ONE TAPE USED
IF ( MFRM2 .NE. NFRM1(ISCAN) ) GO TO 512
IF ( NTAPE .EQ. 3 .AND. NTAPE3 .EQ. 0 ) GO TO 512
XX(1) = XX(NN)
ANG(1) = ANG(NN)
XV(1) = XV(NN)
XA(1) = XA(NN)
XB(1) = XB(NN)
XW(1) = XW(NN)
XA1(1)=XA1(NN)
XB(1)=XB(NN)
XV1(1)=XV1(NN)
XW1(1)=XW1(NN)
GO TO 506
C      READ DATA
C      IF NTAPE=1 OR 2  USE FIRST TAPE
512 IF ( NTAPE .LE. 2 ) CALL GET (IFRM, XY, ITM, IAMP, IRET)

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```
C      IF NPATE=3  USE SECOND TAPE
      IF ( NTAPE .EQ. 3 ) CALL GET2(IFRM, XY, ITM, IAMP, IRET)
      IF ( NTAPE .EQ. 3 ) NTAPE3 = 1
      IF ( IRET .NE. 0 ) IRET = 0
      IF ( NFRM1(ISCAN) .NE. IFRM ) GO TO 512
C      STORE DATA FOR LATER USE
      WRITE ( 3, 964 ) IFRM, XY(4), IAMP
964  FORMAT ( 16, F5.2, 10413 )
      XX(1) = XY(3)
      ANG(1) = XY(4) * 2.0
      IF(IDAY.GE.238) GO TO 610
      MAMP = IAMP(1)
      XV(1) = 1
C      FIND MAXIMUM AMPLITUDE AND VELOCITY
      DO 514 I = 2, 100
      IF ( IAMP(I) .GT. MAMP ) XV(1) = I
      IF ( IAMP(I) .GT. MAMP ) MAMP = IAMP(I)
514  CONTINUE
      XA(1) = MAMP
      XB(1) = IAMP(ICELL)
      XW(1) = 1
C      FIND MAXIMUM VELOCITY USING AMPLITUDE THRESHOLD FOR
C      UNTRANSLATED DATA
      DO 515 I = 2, 100
      IF ( IAMP(I) .GT. IVAMP ) XW(1) = I
515  CONTINUE
      GO TO 516
610  XV1(1)=1.0
      XV(1)=1.0
      MAMP=IAMP(52)
      MAMP1=IAMP(53)
      J=51
C      FIND MAXIMUM AMPLITUDE AND VELOCITY FOR TRANSLATED DATA
      DO 612 I=54,100
      IF(IAMP(I).GT.MAMP1) XV1(1)=I
      IF(IAMP(I).GT.MAMP1) MAMP1=IAMP(I)
      IF(IAMP(J).GT.MAMP) XV(1)=I
      IF ( IAMP(J).GT.MAMP ) MAMP=IAMP(J)
      J=J-1
612  CONTINUE
      XA(1)=MAMP
      XA1(1)=MAMP1
      XB(1)=IAMP(ICELL)
      XW(1)=1.0
      XW1(1)=1.0
      J=51
C      FIND MAXIMUM VELOCITY FOR TRANSLATED DATA
      DO 614 I=54,100
      IF(IAMP(I).GT.IVAMP) XW1(1)=I
      IF(IAMP(J).GT.IVAMP) XW(1)=I-52
      J=J-1
614  CONTINUE
516  MFRM2 = NFRM2(ISCAN)
      NN = NFRM2(ISCAN) - NFRM1(ISCAN) + 1
```

```

DO 528 I = 2, NN
C   READ DATA
   IF ( NTAPE .LE. 2 ) CALL GET (IFRM, XY, ITM, IAMP, IRET)
   IF ( NTAPE .EQ. 3 ) CALL GET2(IFRM, XY, ITM, IAMP, IRET)
C   STORE DATA FOR LATER USE
   WRITE ( 3, 964 ) IFRM, XY(4), IAMP
   XX(I) = XY(3)
   ANG(I) = XY(4) * 2.0
   IF (IDAY.GE.238) GO TO 620
C   FOR UNTRANSLATED DATA
   MAMP = IAMP(1)
   XV(I) = 1
C   FIND VELOCITY AND AMPLITUDE FOR UNTRANSLATED DATA
DO 522 J = 2, 100
   IF ( IAMP(J) .GT. MAMP ) XV(I) = J
   IF ( IAMP(J) .GT. MAMP ) MAMP = IAMP(J)
522 CONTINUE
   XA(I) = MAMP
   XB(I) = IAMP(ICELL)
   XW(I) = 1
C   FIND MAXIMUM VELOCITY USING AMPLITUDE THRESHOLD FOR
C   UNTRANSLATED DATA
DO 524 J = 2, 100
   IF ( IAMP(J) .GT. IVAMP ) XW(I) = J
524 CONTINUE
   GO TO 528
C   FOR TRANSLATED DATA
620 MAMP=IAMP(52)
   MAMP1=IAMP(53)
   XV(I)=1.0
   XV1(I)=1.0
   K=51
C   FIND MAXIMUM POSITIVE VELOCITY
DO 622 J=54,100
   IF(IAMP(J).GT.MAMP1) XV1(I)=J-52
   IF(IAMP(J).GT.MAMP1) MAMP1=IAMP(J)
C   FIND MAXIMUM NEGATIVE VELOCITY
   IF(IAMP(K).GT.MAMP) XV(I)=J-52
   IF (IAMP(K).GT.MAMP) MAMP=IAMP(K)
   K=K-1
622 CONTINUE
   XA(I)=MAMP
   XA1(I)=MAMP1
   XB(I)=IAMP(ICELL)
   XW(I)=1.0
   XW1(I)=1.0
   K=51
C   FIND MAXIMUM POSITIVE VELOCITY USING AMPLITUDE THRESHOLD
DO 624 J=54,100
   IF(IAMP(J).GT.IVAMP) XW1(I)=J-52
C   FIND MAXIMUM NEGATIVE VELOCITY USING AMPLITUDE THRESHOLD
   IF(IAMP(K).GT.IVAMP) XW(I)=J-52
   K=K-1
624 CONTINUE

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```

528  CONTINUE
      REWIND 3
C      FIND GRID SIZE FOR BASE OF 3-D DISPLAY
      KNT = 2
      NX(1) = 1
      NF(1) = NFRM1(ISCAN)
      I = 1
      IF ( XX(1) .GT. XX(2) ) GO TO 534
532  I = I + 1
      IF ( I+1 .GE. NN ) GO TO 536
      IF ( XX(I) .LE. XX(I+1) ) GO TO 532
      NX(KNT) = I
      NF(KNT) = NFRM1(ISCAN) + I
      KNT = KNT + 1
534  I = I + 1
      IF ( I+1 .GE. NN ) GO TO 536
      IF ( XX(I) .GT. XX(I+1) ) GO TO 534
      NX(KNT) = I
      NF(KNT) = NFRM1(ISCAN) + I
      KNT = KNT + 1
      GO TO 532
536  NX(KNT) = NN
      NF(KNT) = NFRM2(ISCAN)
      SUMA = 0.0
      DO 540 I=1, KNT, 2
540  SUMA = SUMA + XX(NX(I))
      SUMB = 0.0
      DO 542 I = 2, KNT, 2
542  SUMB = SUMB + XX(NX(I))
      C = ( KNT+1 ) / 2
      ASUMA = SUMA / C
      C = KNT / 2
      ASUMB = SUMB / C
      IF ( ASUMA .GT. ASUMB ) AMAX = ASUMA
      IF ( ASUMA .GT. ASUMB ) AMIN = ASUMB
      IF ( ASUMA .LT. ASUMB ) AMIN = ASUMA
      IF ( ASUMA .LT. ASUMB ) AMAX = ASUMB
      IAVE = NN / KNT
      TABLE(1) = AMIN
      TABLE(IAVE) = AMAX
      MM = IAVE - 1
      DO 546 I = 2, MM
546  TABLE(I) = TABLE(I-1) + ( AMAX - AMIN ) / FLOAT( IAVE )
      KY = IAVE
      KX = KNT - 1
548  DO 556 I = 1, KX
      DO 554 K = 1, KY
      XXMIN = 1000.0
      NNX = NX(I)
      NNNX = NX(I+1)
      DO 552 J = NNX, NNNX
      XXM = ABS( TABLE(K) - XX(J) )
      IF ( XXM .GE. XXMIN ) GO TO 552
      XXMIN = XXM

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JXX = J
552 CONTINUE
C    TRANSFER DATA FOR 3-D DISPLAY
    IF ( IOPTN .EQ. 11 ) Z(I,K) = XA(JXX)
    IF ( IOPTN .EQ. 12 ) Z(I,K) = XB(JXX)
    IF ( IOPTN .EQ. 21 ) Z(I,K) = XV(JXX)
    IF ( IOPTN .EQ. 22 ) Z(I,K) = XW(JXX)
    IF ( IOPTN .EQ. 31 ) Z(I,K) = XA(JXX) * XV(JXX)
    IF (IOPTN.EQ.111) Z(I,K)=XA(JXX)
    IF (IOPTN.EQ.112) Z(I,K)=XA1(JXX)
    IF (IOPTN.EQ.121) Z(I,K)=XB(JXX)
    IF (IOPTN.EQ.211) Z(I,K)=XV(JXX)
    IF (IOPTN.EQ.212) Z(I,K)=XV1(JXX)
    IF (IOPTN.EQ.311) Z(I,K)=XA(JXX)*XV(JXX)
    IF (IOPTN.EQ.312) Z(I,K)=XA1(JXX)*XV1(JXX)
    IF (IOPTN.EQ.221) Z(I,K)=XW(JXX)
    IF (IOPTN.EQ.222) Z(I,K)=XW1(JXX)
554 CONTINUE
556 CONTINUE
C    FIND SCALING FACTOR FOR 3-D DISPLAY
    ZLOW = Z(1,1)
    ZHIGH = Z(1,1)
    DO 558 I = 1, KX
    DO 558 K=1, KY
    IF ( Z(I,K) .GT. ZHIGH ) ZHIGH = Z(I,K)
    IF ( Z(I,K) .LT. ZLOW ) ZLOW = Z(I,K)
558 CONTINUE
    ZSUM = 0.0
C    SCALE DATA FOR 3-D DISPLAY
    DO 560 I = 1, KX
    DO 560 K = 1, KY
    ZSUM = ZSUM + Z(I,K)
    Z(I,K) = ( Z(I,K) - ZLOW ) / ( ZHIGH - ZLOW ) * 200.0
560 CONTINUE
    ZAVE = ZSUM / FLOAT( KX * KY )
    IF ( ANG1(ISCAN) .LE. ANG2(ISCAN) ) GO TO 566
C    IF DATA IS PLACED BACKWARD, REPLACE DATA
    DO 565 K = 1, KY
    DO 562 I = 1, KX
562 ZZ(I) = Z(I,K)
    KK = KX
    DO 564 I = 1, KX
    Z(I,K) = ZZ(KK)
    KK = KK - 1
564 CONTINUE
565 CONTINUE
C    SET THE OPTIONS FOR 3-D DISPLAY
566 NPY = KX
    NPX = KY
    NBORD = 0
    NGRID(1) = 0
    NGRID(2) = 0
    NGRID(3) = 0
    NGRID(4) = 0
```

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ICAL = 0
ZMAX = 30.0
R = 200.0
THETA = 80.0
PHI = 30.0
ZMIN = 0.0
NHIDE = 1
NSCALE = 2
IF ( IOPTN .EQ. 21 .OR. IOPTN .EQ. 22 ) ZMAX= 15.0
CALL CHRSTZ(2)
C LABEL DISPLAY
CALL MOVABS( 100, 759 )
CALL ADUTST( 32, 'NASA PROJECT DUST DEVIL DAY ' )
CALL ADUTST( 3, LDAY )
CALL ADUTST( 10, ' RUN # ' )
CALL ADUTST( 2, LRUN )
IF (NTAPE.EQ.3) CALL ADUTST(16,' TAPE 2 OF 2-')
IF (NTAPE.EQ.2) CALL ADUTST(16,' TAPE 1 OF 2-')
IF ( NTAPE .EQ. 1 ) CALL ADUTST( 13, ' TAPE # 1-' )
IF (NTAPE .EQ.3) CALL ADUTST(5,LTAPE2)
IF (NTAPE.LE.2) CALL ADUTST(5,LTAPE1)
CALL CHRSTZ(3)
CALL MOVABS( 70, 740 )
CALL ADUTST( 7, 'SCAN # ' )
CALL ADUTST( 2, LSCAN )
CALL ADUTST( 13, ' FRAME # ' )
CALL ADUTST( 6, LFRM1 )
CALL ADUTST( 9, ' ANGLE ' )
CALL ADUTST( 6, AANG1 )
CALL ADUTST( 18, ' TO FRAME # ' )
CALL ADUTST( 6, LFRM2 )
CALL ADUTST( 9, ' ANGLE ' )
CALL ADUTST( 6, AANG2 )
CALL ADUTST( 25, ' CRITICAL AMP AT CELL ' )
CALL ADUTST( 3, LCELL )
CALL MOVABS( 70, 710 )
CALL ADUTST( 8, 'OPTION #' )
IF ( IOPTN .EQ. 11 ) CALL ADUTST( 3, ' 11' )
IF ( IOPTN .EQ. 12 ) CALL ADUTST( 3, ' 12' )
IF ( IOPTN .EQ. 21 ) CALL ADUTST( 3, ' 21' )
IF ( IOPTN .EQ. 22 ) CALL ADUTST( 3, ' 22' )
IF ( IOPTN .EQ. 31 ) CALL ADUTST( 3, ' 31' )
IF (IOPTN.EQ.111) CALL ADUTST(5,' 11-1')
IF (IOPTN.EQ.112) CALL ADUTST(5,' 11-2')
IF (IOPTN.EQ.121) CALL ADUTST(5,' 12-1')
IF (IOPTN.EQ.211) CALL ADUTST(5,' 21-1')
IF (IOPTN.EQ.212) CALL ADUTST(5,' 21-2')
IF (IOPTN.EQ.221) CALL ADUTST(5,' 22-1')
IF (IOPTN.EQ.222) CALL ADUTST(5,' 22-2')
IF (IOPTN.EQ.311) CALL ADUTST(5,' 31-1')
IF (IOPTN.EQ.312) CALL ADUTST(5,' 31-2')
IF (IOPTN.GT.300) GO TO 567
IF ( IOPTN .EQ. 31 ) GO TO 567
WRITE ( 2, 969 ) ZHIGH, ZAVE

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969  FORMAT ( 2F8.1 )
      REWIND 2
C      TRANSLATE REAL NUMBER TO CHARACTER FORM
      READ ( 2, 970 ) ZHIGH2, ZAVE2
970  FORMAT ( 2X, A6, 2X, A6 )
      REWIND 2
      CALL MOVABS( C, 675 )
      CALL ADUTST ( 7, 'MAXIMUM' )
      CALL CHRSTZ(2)
      IF(IOP.TN.GT.100) IOP=IOP.TN/10
C      DISPLAY MAXIMUM AND AVERAGE AMPLITUDE OR VELOCITY
      IF ( IOP .LT. 20 ) CALL ADUTST( 3, ' I ' )
      IF ( IOP .GE. 20 ) CALL ADUTST( 3, ' V ' )
      CALL CHRSTZ(3)
      CALL ADUTST( 1, '=' )
      CALL ADUTST( 6, ZHIGH2 )
      CALL MOVABS( C, 650 )
      CALL ADUTST ( 7, 'AVERAGE' )
      CALL CHRSTZ(2)
      IF ( IOP .LT. 20 ) CALL ADUTST( 3, ' I ' )
      IF ( IOP .GE. 20 ) CALL ADUTST( 3, ' V ' )
      CALL CHRSTZ(3)
      CALL ADUTST( 1, '=' )
      CALL ADUTST( 6, ZAVE2 )
567  CONTINUE
      IF ( ISAME .EQ. 1 ) GO TO 572
      KNT1 = KNT-1
      DO 570 I = 1, KNT1
      K = NX(I)
      L = NX(I+1)
      KL = 0
      ANGAVE(I) = 0.0
      DO 568 J = K, L
      ANGAVE(I) = ANG(J) + ANGAVE(I)
      KL = KL + 1
568  CONTINUE
      ANGAVE(I) = ANGAVE(I) / FLOAT(KL)
570  CONTINUE
      ISAME = 1
C      TRANSLATE NUMERICAL DATA TO CHARACTER FORM
      WRITE ( 2, 968 ) ( I, I=1, 50)
968  FORMAT ( 20( I2, 2X ) )
      REWIND 2
      READ ( 2, 966 ) II
966  FORMAT ( 20A4 )
      REWIND 2
      WRITE ( 2, 967 ) ( ANGAVE(I), I=1, KNT1 )
967  FORMAT ( 10F8.1 )
      REWIND 2
      READ ( 2, 972 ) ( ANGAV(I), I=1, KNT1 )
972  FORMAT ( 10( 4X, A4 ) )
      REWIND 2
      WRITE ( 2, 967 ) ( TABLE(I), I=1, IAVE)
      REWIND 2

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      READ ( 2, 973 ) ( TABLE2(I), I=1, IAVE )
973  FORMAT ( 10( 3X, A5 ) )
      REWIND 2
572  IY = 575
C      DISPLAY ANGLES
      CALL CHRISZ(3)
      CALL MOVABS( 15, 590 )
      CALL ADUTST( 5, 'ANGLE' )
      CALL CHRISZ(4)
      DO 573 I = 1, KNT1
      CALL MOVABS( 5, IY )
      CALL ADUTST( 4, II(I) )
      CALL ADUTST( 4, ANGAV(I) )
      IF ( KNT1 .GE. 40 ) IY = IY - 14
      IF ( KNT1 .LT. 40 ) IY = IY - 15
573  CONTINUE
      CALL MOVABS( 680, 40 )
      IF ( ANG1(ISCAN) .LE. ANG2(ISCAN) ) CALL ADUTST( 5, ANGAV(1) )
      IF ( ANG1(ISCAN) .GT. ANG2(ISCAN) ) CALL ADUTST( 5, ANGAV(KNT1) )
      CALL MOVABS( 180, 580 )
      IF ( ANG1(ISCAN) .LE. ANG2(ISCAN) ) CALL ADUTST( 5, ANGAV(KNT1) )
      IF ( ANG1(ISCAN) .GT. ANG2(ISCAN) ) CALL ADUTST( 5, ANGAV(1) )
      CALL CHRISZ(3)
      CALL MOVABS( 960, 615 )
      CALL ADUTST( 1, 'R' )
      IY = 600
      CALL CHRISZ(4)
C      DISPLAY RADIUS
      DO 574 I = 1, IAVE
      CALL MOVABS( 930, IY )
      CALL ADUTST( 4, II(I) )
      CALL ADUTST( 5, TABLE2(I) )
      IY = IY - 15
574  CONTINUE
      CALL MOVABS( 860, 650 )
      CALL ADUTST( 5, TABLE2(1) )
      CALL MOVABS( 800, 40 )
      CALL ADUTST( 5, TABLE2(IAVE) )
      CALL CHRISZ(2)
      CALL MOVABS( 840, 380 )
      CALL ADUTST( 1, 'R' )
      CALL MOVABS( 380, 280 )
      CALL ADUTST( 5, 'ANGLE' )
      CALL MOVABS( 100, 5 )
      IF ( IOP .NE. 11 ) GO TO 580
      CALL ADUTST( 1, 'I' )
      CALL CHRISZ(4)
      CALL ADUTST( 3, 'MAX' )
      CALL CHRISZ(2)
      CALL ADUTST( 15, 'R, A DISPLAY' )
      GO TO 590
C      DISPLAY LABEL
580  IF ( IOP .NE. 12 ) GO TO 581
      CALL ADUTST( 37, 'I, R, A DISPLAY AT VELOCITY CELL' )

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CALL AOUTST( 3, LCELL )
GO TO 590
581 IF ( IOP .NE. 21 ) GO TO 582
CALL AOUTST( 32, 'V, R, A  DISPLAY (VELOCITY AT I' )
CALL CHRISZ(4)
CALL AOUTST( 3, 'MAX' )
CALL CHRISZ(2)
CALL AOUTST( 1, ' )' )
GO TO 590
582 IF ( IOP .NE. 22 ) GO TO 583
CALL AOUTST( 1, 'V' )
CALL CHRISZ(4)
CALL AOUTST( 3, 'MAX' )
CALL CHRISZ(2)
CALL AOUTST( 15, ' , R, A  DISPLAY' )
CALL CHRISZ(4)
CALL AOUTST( 26, '      AMPLITUDE THRESHOLD AT' )
CALL CHRISZ(3)
CALL AOUTST( 4, ' I =' )
WRITE ( 2, 904 ) IVAMP
REWIND 2
READ ( 2, 931 ) IVAMPL
REWIND 2
CALL AOUTST( 4, IVAMPL )
GO TO 590
583 IF ( IOP .NE. 31 ) GO TO 590
CALL AOUTST( 5, 'V * I' )
CALL CHRISZ(4)
CALL AOUTST( 3, 'MAX' )
CALL CHRISZ(2)
CALL AOUTST( 15, ' , R, A  DISPLAY' )
590 CONTINUE
C      THREE-DIMENSIONAL DISPLAY ACTIVATED
CALL THREED(      R, THETA, PHI, ZMIN, ZMAX, NPX, NPY, NSCALE,
1      NHIDE, NBORD, NGRID, Z )
CALL AINST( 3, ICRT )
CALL ERASE
CALL MOVABS( 100, 280 )
595 CALL AOUTST( 13, 'ENTER  OPTION' )
IF(IDAY.GE.238) GO TO 592
C      ENTER OPTION FOR UNTRANSLATED DATA
CALL AINST( 2, IOPTN )
CALL CORE ( IOPTN, 2 )
READ ( 99, 902 ) IOPTN
IOP=IOPTN
C      IF OPTION IS 55  CALL "RAY"
IF ( IOP .EQ. 55 ) GO TO 710
GO TO 596
C      ENTER OPTION FOR TRANSLATED DATA
592 CALL AINST(3,IOPTN)
CALL CORE(IOPTN,3)
READ(99,903) IOPTN
IOP=IOPTN
C      IF OPTION IS 555 OR 55  CALL "RAY"

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      IF ( IOPTN .EQ. 555 ) GO TO 710
596 IF (IOPTN.GT.100) IOP=IOPTN/10
      IF ( IOP .EQ. 55 ) GO TO 710
      IF (IOP.NE.22)GO TO 597
      CALL MOVABS( 100, 260 )
      CALL ADUTST( 43, 'ENTER AMP FOR MAX VELOCITY...(3 DIGITS)' )
C      ENTER AMPLITUDE THRESHOLD
      CALL AINST( 3, IVAMP )
      CALL CORE ( IVAMP, 3 )
      READ ( 99, 903 ) IVAMP
C      READ RAW DATA
      READ(3,964,END=587) IFRM,XY(4),IAMP
      XW(1)=1
C      ASSIGN MAXIMUM VELOCITY
      DO 585 I=2,100
      IF(IAMP(I).GT.IVAMP) XW(1)=I
585 CONTINUE
      DO 587 K=2,NN
      READ(3,964,END=587) IFRM,XY(4),IAMP
      XW(1)=1
      DO 586 J=2,100
      IF(IAMP(J).GT.IVAMP) XW(1)=J
586 CONTINUE
537 CONTINUE
      REWIND 3
597 CONTINUE
C      IF OPTION IS 99 OR 999 RETURN TO CALLING PROGRAM
      IF ( IOPTN .EQ. 99 ) RETURN
      IF (IOPTN.EQ.990) RETURN
      IF (IOPTN.EQ.999) RETURN
      CALL ERASE
      GO TO 548
710 CONTINUE
      CALL RAY( NFRM1, ANG1, NFRM2, ANG2, NSCAN, ISCAN1, IDAY, IRUN,
1          NTAPE, ITAPES, ICELL,ISCAN, ITMIN, ITMAX )
      GO TO 1
901 FORMAT ( I1 )
902 FORMAT ( I2 )
903 FORMAT ( I3 )
904 FORMAT ( I4 )
905 FORMAT ( I5 )
906 FORMAT ( I6 )
908 FORMAT ( I8 )
921 FORMAT ( F5.2 )
922 FORMAT ( F4.2 )
931 FORMAT ( A4 )
932 FORMAT ( 2A4 )
952 FORMAT ( F8.2 )
951 FORMAT ( 20A4 )
999 RETURN
      END

```

SUBROUTINE RAY

```
C*****
C
C      SUBROUTINE  RAY
C
C      THIS SUBROUTINE DISPLAYS ONE "RAY" OF DATA IN THREE
C      DIMENSIONAL FORM
C*****
C
C      SUBROUTINE  RAY  ( NFRM1, ANG1, NFRM2, ANG2, NSCAN, ISCAN1, IDAY,
1      IRUN, NTAPE, ITAPES, ICELL, ISCAN, ITMIN, ITMAX)
C      DIMENSION  IAMP(104), XY(4), IN(2)
C      DIMENSION  Z(100,100), NGRID(4)
C      DIMENSION  TITLE(20)
C      DIMENSION  NFRM1(60), ANG1(60), NFRM2(60), ANG2(60), ITAPES(2)
C      DOUBLEPRECISION  LFRM1, AANG1, LFRM2, AANG2, LTAPE1, LTAPE2
C      DOUBLEPRECISION  ANGAV(50), TABLE2(50)
C      DOUBLEPRECISION  ZAVE2, ZHIGH2
C      COMMON / HARP / ICAL, NSCOPE
C      CALL CHRSTZ( 3 )
C      NTAPE3 = 0
C      ISAME = 0
C      IRET = 0
C      NPX = 100
C      SEE WHICH TAPE NEEDS TO BE READ
C      IF ( ISCAN .GE. ISCAN1 ) NTAPE=3
C      NSCOPE = 0
C      FIND SCAN LIMITS
C      WRITE ( 2, 904 ) ISCAN
C      REWIND 2
C      READ ( 2, 931 ) LSCAN
C      REWIND 2
C      CALL ERASE
C      IREAD=1
C      CALL CHRSTZ(3)
C      DISPLAY TO USER WHICH SCAN HE IS IN
C      CALL MOVABS( 100, 750 )
C      CALL ADUTST( 6 , 'SCAN #' )
C      CALL ADUTST( 4, LSCAN )
C      CALL MOVABS( 100, 720 )
C      CALL ADUTST(17 , 'ENTER ANGLE(REAL)' )
C      ENTER ANGLE SIZE
C      CALL AINST( 4, ANG)
C      CALL CORE( ANG, 4 )
C      READ ( 99, 921 ) ANG
921  FORMAT ( F4.2 )
C      CALL MOVABS( 100, 690 )
C      CALL ADUTST( 18, 'ENTER SPREAD(REAL)' )
C      ENTER SPREAD
C      CALL AINST( 4, SPR )
C      CALL CORE( SPR, 4 )
C      READ ( 99, 922 ) SPR
922  FORMAT ( F4.3 )
C      IF ANGLE IS ZERO  USE ANGLE RANGE FROM CALLING PROGRAM
```

```
IF ( ANG .EQ. 0.0 ) IANG = ITMIN
IF ( ANG .EQ. 0.0 ) JANG = ITMAX
IF ( ANG .EQ. 0.0 ) GO TO 202
C    ASSIGN ANGLE LIMITS
    IANG = ANG - SPR
    JANG = ANG + SPR
202  SANG = 90.0
    CALL ERASE
C    CONVERT NUMERICAL DATA TO CHARACTER FORM
    READ ( 1, 911 ) IDUM, JDUM, KFRM, MFRM
911  FORMAT ( I2, I1, I6, I6 )
    LFRM = KFRM
210  KFRM = LFRM
    READ ( 1, 912 ) ISCN, IDRC, TAVE, LFRM
912  FORMAT ( I2, I1, F6.2, I6 )
    JSCN = ISCN
    IF ( ISCN .NE. ISCAN ) GO TO 210
215  IAVE = TAVE
    IF ( IAVE .GE. IANG .AND. IAVE .LE. JANG ) GO TO 220
    SANG = TANG
    KFRM = LFRM
    READ ( 1, 912 ) ISCN, IDRC, TAVE, LFRM
C    IS ANGLE GIVEN BY USE IN SCAN RANGE?
    IF ( JSCN .EQ. ISCN ) GO TO 215
    CALL ADUTST(27, 'ANGLE NOT IN SCANNING RANGE' )
    CALL AINST( 1, DUMMY )
    REWIND 1
    RETURN
220  CONTINUE
    IRET = 0
C    READ DATA
299  IF ( NTAPE .EQ. 3 ) CALL GET2(IFRM, XY, ITM, IAMP, IRET )
    IF ( NTAPE .LE. 2 ) CALL GET (IFRM, XY, ITM, IAMP, IRET )
    IF ( IFRM .LT. KFRM ) GO TO 299
    IF ( IFRM .EQ. KFRM ) GO TO 400
    IRET = 1
    IF ( NTAPE .LE. 2 ) CALL GET (IFRM, XY, ITM, IAMP, IRET )
    IF ( NTAPE .EQ. 3 ) CALL GET2(IFRM, XY, ITM, IAMP, IRET )
    IRET = 0
    GO TO 299
400  IF ( IDRC .EQ. 0 ) GO TO 412
    IF ( IDRC .EQ. 1 ) GO TO 402
    CALL ADUTST( 28, 'ERROR IN DIRECTION INDICATOR' )
    CALL AINST( 1, DUMMY )
    CALL ERASE
    GO TO 999
404  READ ( 1, 912, END=999 ) ISCN, IDRC, TAVE, LFRM
    IF ( ISCN .NE. ISCAN ) GO TO 999
    IAVE = TAVE
    IF ( IAVE .GE. IANG .AND. IAVE .LE. JANG ) GO TO 402
    GO TO 999
402  NPY = LFRM - KFRM
    K = NPY
    IMAXZ = 0
```

```

      KOUNT = KOUNT + 1
C      READ DATA
      DO 407 I = 1, NPY
      IF ( NTAPE .LE. 2 ) CALL GET (IFRM, XY, ITM, IAMP, IRET )
      IF ( NTAPE .EQ. 3 ) CALL GET2(IFRM, XY, ITM, IAMP, IRET )
      IF(I.EQ.1) A=XY(3)
      AA=XY(3)
C      FIND MAXIMUM AMPLITUDE
      DO 406 J = 1, NPX
      IF ( IMAXZ .LT. IAMP(J) ) IMAXZ = IAMP(J)
406  Z(K,J) = IAMP(J+2)
      K = K - 1
407  CONTINUE
      CALL ERASE
C      CHANGE ANGLE TO TRUE ANGLE
      AANG1 = ANG1(ISCAN) * 2.0
      AANG2 = ANG2(ISCAN) * 2.0
C      CONVERT NUMERICAL DATA TO CHARACTER FORM
      WRITE ( 2, 962 ) NFRM1(ISCAN), AANG1, NFRM2(ISCAN),
1      AANG2, IDAY, IRUN, ITAPES, ISCAN, ICELL
      REWIND 2
      READ ( 2, 963 ) LFRM1, AANG1, LFRM2, AANG2, LDAY, LRUN, LTAPE1,
1      LTAPE2, LSCAN, LCELL
      REWIND 2
C      LABEL DISPLAY
      CALL CHRISZ(2)
      CALL MOVABS( 100, 750 )
      CALL ADUTST( 32, 'NASA PROJECT DUST DEVIL DAY ' )
      CALL ADUTST( 3, LDAY )
      CALL ADUTST( 10, ' RUN # ' )
      CALL ADUTST( 2, LRUN )
      IF (NTAPE.EQ.3) CALL ADUTST(16, ' TAPE 2 OF 2-' )
      IF (NTAPE.EQ.2) CALL ADUTST(16, ' TAPE 1 OF 2-' )
      IF ( NTAPE .EQ. 1 ) CALL ADUTST( 13, ' TAPE # 1-' )
      IF (NTAPE .EQ.3) CALL ADUTST( 5,LTAPE2)
      IF (NTAPE.LE.2) CALL ADUTST( 5,LTAPE1)
      CALL CHRISZ(3)
      CALL MOVABS ( 80, 725 )
      CALL ADUTST( 7, 'SCAN # ' )
      CALL ADUTST( 2, LSCAN )
      CALL ADUTST( 13, ' FRAME # ' )
      CALL ADUTST( 6, LFRM1 )
      CALL ADUTST( 9, ' ANGLE ' )
      CALL ADUTST( 6, AANG1 )
      CALL ADUTST( 18, ' TO FRAME # ' )
      CALL ADUTST( 6, LFRM2 )
      CALL ADUTST( 9, ' ANGLE ' )
      CALL ADUTST( 6, AANG2 )
      CALL ADUTST( 25, ' CRITICAL AMP AT CELL ' )
      CALL ADUTST( 3, LCELL )
      CALL MOVABS( 70, 500 )
C      CALL MOVABS( 100, 300 )
C      CALL ADUTST( 8, ' RADIUS' )
      USE THIS TO SEE GRAPH FROM
      DIFFERENT ANGLE

```



```

C      CONVERT NUMERICAL DATA TO CHARACTER FORM
      WRITE ( 2, 959 ) A, AA
      REWIND 2
      READ ( 2, 939 ) A, AA
      REWIND 2
      CALL CHRSTZ(4)
      CALL MOVABS(0, 340)
C      CALL MOVABS( 380, 140 )          USE THIS FOR DIFFERENT ANGLE
      CALL ADUTST(4, A)
      CALL MOVABS(360, 640 )
C      CALL MOVABS(0, 450 )          USE THIS FOR DIFFERENT ANGLE
      CALL ADUTST(4, AA)
      CALL CHRSTZ(3)
C      LABEL FOR GRAPH
      CALL MOVABS( 300, 140 )
C      CALL MOVABS( 750, 200 )          USE THIS FOR DIFFERENT ANGLE
      CALL ADUTST( 22, 'VELOCITY..AMP(3 - 102)' )
      CALL MOVABS( 700, 700 )
      CALL ADUTST ( 7, 'FRAME #' )
      WRITE( 2, 908 ) KFRM
      REWIND 2
      READ ( 2, 932 ) IN
      REWIND 2
C      LABEL FOR GRAHP
      CALL ADUTST( 8, IN )
      CALL ADUTST( 4, ' TO' )
      WRITE ( 2, 908 ) LFRM
      REWIND 2
      READ ( 2, 932 ) IN
      REWIND 2
      CALL ADUTST ( 8, IN )
      CALL MOVABS( 700, 670 )
      CALL ADUTST ( 7, 'ANGLE =' )
      WRITE ( 2, 952 ) TAVE
      REWIND 2
      READ ( 2, 932 ) IN
      REWIND 2
      CALL ADUTST ( 8, IN )
      CALL MOVABS( 700, 640 )
      CALL ADUTST( 19, 'MAXIMUM AMP VALUE = ' )
      WRITE ( 2, 904 ) IMAXZ
      REWIND 2
      READ ( 2, 931 ) IMAXZZ
      REWIND 2
      CALL ADUTST( 4, IMAXZZ )
C      SET UP THE OPTION FOR 3-D DISPLAY
      R = 500.0
      ICAL = 0
      THETA = 30.0
C      THETA = -30.0          USE THIS FOR DIFFERENT ANGLE
      PHI = 30.0
      ZMIN = 0.0
      ZMAX = 20.0
      NPX = 100

```

```
NHIDE = 1
NSCALE = 2
NBORD = 0
NGRID(1) = C
NGRID(2) = 0
NGRID(3) = 0
NGRID(4) = 0
ZMN = Z(1,1)
ZMX = Z(1,1)
C      FIND MAXIMUM AND MINIMUM DATA
C      FOR SCALING FACTORS
DO 451 I = 1, NPY
DO 451 J = 1, NPX
IF ( ZMN .GT. Z(I,J) ) ZMN = Z(I,J)
IF ( ZMX .LT. Z(I,J) ) ZMX = Z(I,J)
451 CONTINUE
C      SCALE DATA
DO 452 I = 1, NPY
DO 452 J = 1, NPX
Z(I,J) = ( Z(I,J) - ZMN ) * ( 100.0 / ( ZMX - ZMN ) )
452 CONTINUE
C      PLOT 3-D GRAHP
CALL THREED( R, THETA, PHI, ZMIN, ZMAX, NPX, NPY, NSCALE,
1          NHIDE, NBORD, NGRID, Z )
KFRM = LFRM
C      CONVERT NUMERICAL DATA TO CHARACTER FORM
414 READ ( 1, 912, END=999 ) ISCN, IDRC, TAVE, LFRM
IF ( ISCN .NE. ISCAN ) GO TO 999
IAVE = TAVE
IF ( IAVE .GE. IANG .AND. IAVE .LE. JANG ) GO TO 412
GO TO 999
412 NPY = LFRM - KFRM
IMAXZ = 0
KOUNT = KOUNT + 1
C      READ DATA
DO 415 I = 1, NPY
IF ( NTAPE .EQ. 3 ) CALL GET2(IFRM, XY, ITM, IAMP, IRET )
IF ( NTAPE .LE. 2 ) CALL GET (IFRM, XY, ITM, IAMP, IRET )
IF(I.EQ.1) A=XY(3)
AA=XY(3)
DO 413 J = 1, NPX
IF ( IMAXZ .LT. IAMP(J) ) IMAXZ = IAMP(J)
413 Z(I,J) = IAMP(J+2)
415 CONTINUE
CALL ERASE
AANG1 = ANG1(ISCAN) * 2.0
AANG2 = ANG2(ISCAN) * 2.0
WRITE ( 2, 962 ) NFRM1(ISCAN), AANG1, NFRM2(ISCAN),
1          AANG2, IDAY, IRUN, ITAPES, ISCAN, ICELL
962 FORMAT ( I6, F6.3, I6, F6.3, I3, I2, 2I5, I2, I3 )
REWIND 2
READ ( 2, 963 ) LFRM1, AANG1, LFRM2, AANG2, LDAY, LRUN, LTAPE1,
1          LTAPE2, LSCAN, LCELL
963 FORMAT ( 4A6, A3, A2, 2A5, A2, A3 )
```

```

REWIND 2
CALL CHRISZ(2)
CALL MOVABS( 100, 750 )
CALL ADUTST( 32, 'NASA PROJECT DUST DEVIL      DAY ' )
CALL ADUTST( 3, LDAY )
CALL ADUTST ( 10, '      RUN # ' )
CALL ADUTST( 2, LRUN )
IF (NTAPE.EQ.3) CALL ADUTST(16,'      TAPE 2 OF 2-' )
IF (NTAPE.EQ.2) CALL ADUTST (16,'      TAPE 1 OF 2-' )
IF ( NTAPE .EQ. 1 ) CALL ADUTST( 13, '      TAPE # 1-' )
IF (NTAPE .EQ.3) CALL ADUTST (5,LTAPE2)
IF (NTAPE.LE.2) CALL ADUTST (5,LTAPE1)
CALL CHRISZ(3)
CALL MOVABS ( 80, 725 )
CALL ADUTST( 7, 'SCAN # ' )
CALL ADUTST( 2, LSCAN )
CALL ADUTST( 13, '      FRAME # ' )
CALL ADUTST( 6, LFRM1 )
CALL ADUTST( 9, '      ANGLE ' )
CALL ADUTST( 6, AANG1 )
CALL ADUTST( 18, '      TO      FRAME # ' )
CALL ADUTST( 6, LFRM2 )
CALL ADUTST( 9, '      ANGLE ' )
CALL ADUTST( 6, AANG2 )
CALL ADUTST( 25, '      CRITICAL AMP AT CELL ' )
CALL ADUTST ( 3, LCELL )
CALL MOVABS( 70, 500 )
C CALL MOVABS( 100, 300 )      USE THIS FOR DIFFERENT ANGLE
CALL ADUTST( 8, '      RADIUS' )
WRITE ( 2, 959 ) A, AA
REWIND 2
READ ( 2, 939 ) A, AA
REWIND 2
CALL CHRISZ(4)
CALL MOVABS(360, 640 )
C CALL MOVABS(0, 450 )      USE THIS FOR DIFFERENT ANGLE
CALL ADUTST(4,A)
CALL MOVABS(0,340)
C CALL MOVABS( 380, 140 )      USE THIS FOR DIFFERENT ANGLE
CALL ADUTST(4,AA)
CALL CHRISZ(3)
CALL MOVABS( 300, 140 )
CALL MOVABS( 750, 200)      USE THIS FOR DIFFERENT ANGLE
CALL ADUTST( 22, 'VELOCITY..AMP(3 - 102)' )
CALL MOVABS( 700, 700 )
CALL ADUTST ( 7, 'FRAME #' )
WRITE( 2, 908 ) KFRM
REWIND 2
READ ( 2, 932 ) IN
REWIND 2
CALL ADUTST( 8, IN )
CALL ADUTST( 4, '      TO' )
WRITE ( 2, 908 ) LFRM
REWIND 2

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```

READ ( 2, 932 ) IN
REWIND 2
CALL ADUTST ( 8, IN )
CALL MOVABS( 700, 670 )
CALL ADUTST ( 7, 'ANGLE = ' )
WRITE ( 2, 952 ) TAVE
REWIND 2
READ ( 2, 932 ) IN
REWIND 2
CALL ADUTST ( 8, IN )
CALL MOVABS( 700, 640 )
CALL ADUTST( 19, 'MAXIMUM AMP VALUE = ' )
WRITE ( 2, 904 ) IMAXZ
REWIND 2
READ ( 2, 931 ) IMAXZZ
REWIND 2
CALL ADUTST( 4, IMAXZZ )
C      OPTIONS FOR 3-D DISPLAY
NBORD = 0
NGRID(1) = 0
NGRID(2) = C
NGRID(3) = 0
NGRID(4) = C
R = 500.0
ICAL = 0
THETA = 30.0
THETA = -30.0
PHI = 30.0
ZMIN = 0.0
ZMAX = 20.0
NPX = 100
NHIDE = 1
NSCALE = 2
ZMN = Z(1,1)
ZMX = Z(1,1)
C      FIND SCALING FACTOR
DO 461 I = 1, NPY
DO 461 J = 1, NPX
IF ( ZMN .GT. Z(I,J) ) ZMN = Z(I,J)
IF ( ZMX .LT. Z(I,J) ) ZMX = Z(I,J)
461 CONTINUE
C      SCALE DATA
DO 462 I = 1, NPY
DO 462 J = 1, NPX
Z(I,J) = ( Z(I,J) - ZMN ) * ( 100.0 / ( ZMX - ZMN ) )
462 CONTINUE
C      PLOT 3-D GRAHP
CALL THREEED( K, THETA, PHI, ZMIN, ZMAX, NPX, NPY, NSCALE,
1 NHIDE, NBORD, NGRID, Z )
KFRM = LFRM
GO TO 404
999 REWIND 1
RETURN
901 FORMAT ( I1 )

```

USE THIS FOR DIFFERNT ANGLE

903 FORMAT (I3)
904 FORMAT (I4)
905 FORMAT (I5)
906 FORMAT (I6)
908 FORMAT (I8)
931 FORMAT (A4)
932 FORMAT (2A4)
939 FORMAT (2A4)
952 FORMAT (F8.2)
951 FORMAT (20A4)
959 FORMAT (2F4.0)
END

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SUBROUTINE THREEED


```

      YMAX=YMAX1
      NPX=NPX1
      NPY=NPY1
90  CONTINUE
      IF(KTRACK.NE.0) GO TO 33
      XCAM = R
      YCAM = THETA
      ZCAM = PHI
      DO 92 K=1,NPY
      DO 92 J=1,NPX
92  Z(K,J)=Z1(K,J)
33  IF(KLOG.EQ.1) GO TO 96
      XMIN1=XMIN
      XMAX1=XMAX
      YMIN1=YMIN
      YMAX1=YMAX
      NPX1=NPX
      NPY1=NPY
96  CONTINUE
      HEIGHT = 7.50
      WIDTH = 10.50

```

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```

C
C  MINIMA AND MAXIMA NOT PROVIDED
C
      BOT=Z(1,1)
      TOP=BOT
      DO 30 I = 1,NPY
      DO 30 J = 1,NPX
      IF(BOT .GT. Z(1,J)) BOT = Z(1,J)
      IF(TOP .LT. Z(1,J)) TOP = Z(1,J)
30  CONTINUE
      XMIN = BOT
      XMAX = TOP
      YMIN = BOT
      YMAX = TOP
32  IF(ZMIN .NE. ZMAX) GO TO 29
      ZMIN = BOT
      ZMAX = TOP
29  CONTINUE

```

```

C
C  NOW STORE THESE VALUES AS NEEDED FOR FUTURE USE
C
      XYLIM(1,1) = XMIN
      XYLIM(2,1) = XMAX
      XYLIM(1,2) = YMIN
      XYLIM(2,2) = YMAX
      XYLIM(1,3) = ZMIN
      XYLIM(2,3) = ZMAX
      XYLIM(1,4) = ZMIN
      XYLIM(2,4) = ZMAX
      XYLIM(1,5) = WIDTH
      XYLIM(2,5) = HEIGHT
      XYLIM(1,6) = 0.5
      XYLIM(2,6) = 0.5

```



```

5 WRITE(6,7) NPX,NPY
7 FORMAT(/,' NUMBER OF X VALUES = ',I4,/,
1' NUMBER OF Y VALUES = ',I4)
   IF(NHIDE) 8,8,10
8 WRITE(6,9)
9 FORMAT(' ALL POINTS - INCLUDING HIDDEN POINTS - DRAWN')
   GO TO 12
10 WRITE(6,11)
11 FORMAT(' HIDDEN POINTS NOT DRAWN')
12 IF(NBORD) 13,15,13
13 WRITE(6,14)
14 FORMAT(' BORDER WILL BE DRAWN')
   GO TO 17
15 WRITE(6,16)
16 FORMAT(' NO BORDER AROUND PLOT')
17 IF(NGRID(1)) 18,18,20
18 WRITE(6,19)
19 FORMAT(' GRID LINES WILL NOT BE DRAWN')
   GO TO 22
20 WRITE(6,21) NGRID(2),NGRID(3),NGRID(4)
21 FORMAT(' GRID LINES SELECTED -',/,
15X,I4,' GRID LINES WILL BE DRAWN ALONG X AXIS',/,
25X,I4,' GRID LINES WILL BE DRAWN ALONG Y AXIS',/,
35X,I4,' GRID LINES WILL BE DRAWN ALONG Z AXIS')
22 WRITE(6,24)
   DO 25 I = 1,NPY
24 FORMAT(////,' ///// INPUT MATRIX FOLLOWS /////',////)
25 WRITE(6,(FORM) (Z(I,J),J=1,NPX)

```

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```

C      DEFINE POSITIONS
C
C      DEFAULT OPTIONS REMOVED
C      CHANGING CAMERA VALUES TO BE ENTERED IN TERMS OF R,THETA,PHI
      PI = 3.1415926
      YCAM=      PI*YCAM/180.
      ZCAM=      PI*ZCAM/180.
      THETA= YCAM
      YCAM= XCAM * SIN (YCAM)
      ZCAM= XCAM * SIN(ZCAM)
      XCAM = XCAM * COS(THETA)
      CAMLOC(1) = XCAM
      CAMLOC(2) = YCAM
      CAMLOC(3) = ZCAM
      DO 27 I = 4,32
27 CAMLOC(I) = 0.0
C      CAMERA AIM
      CAMLOC(9)= (XMAX-XMIN)/2.
      CAMLOC(10)= (YMAX- YMIN)/2.
      CAMLOC(11)= 0.0
C
C      READY TO PLOT
C
      CALL CHRSLZ(4)
      CALL VWINDO(0.,11.,0.,8.5)

```

CALL PURJDY(Z,NPX,NPY,100,CAMLOC,XYLIM,0,NSCALE,NHIDE,NBORD,NGRID)

C
C
C

LOOP FOR NEXT DATA SET

IF(NSCOPE.EQ.0) KTRACK= KTRACK +1

IF(NSCOPE.NE.0) KTRACK=0

GO TO 1

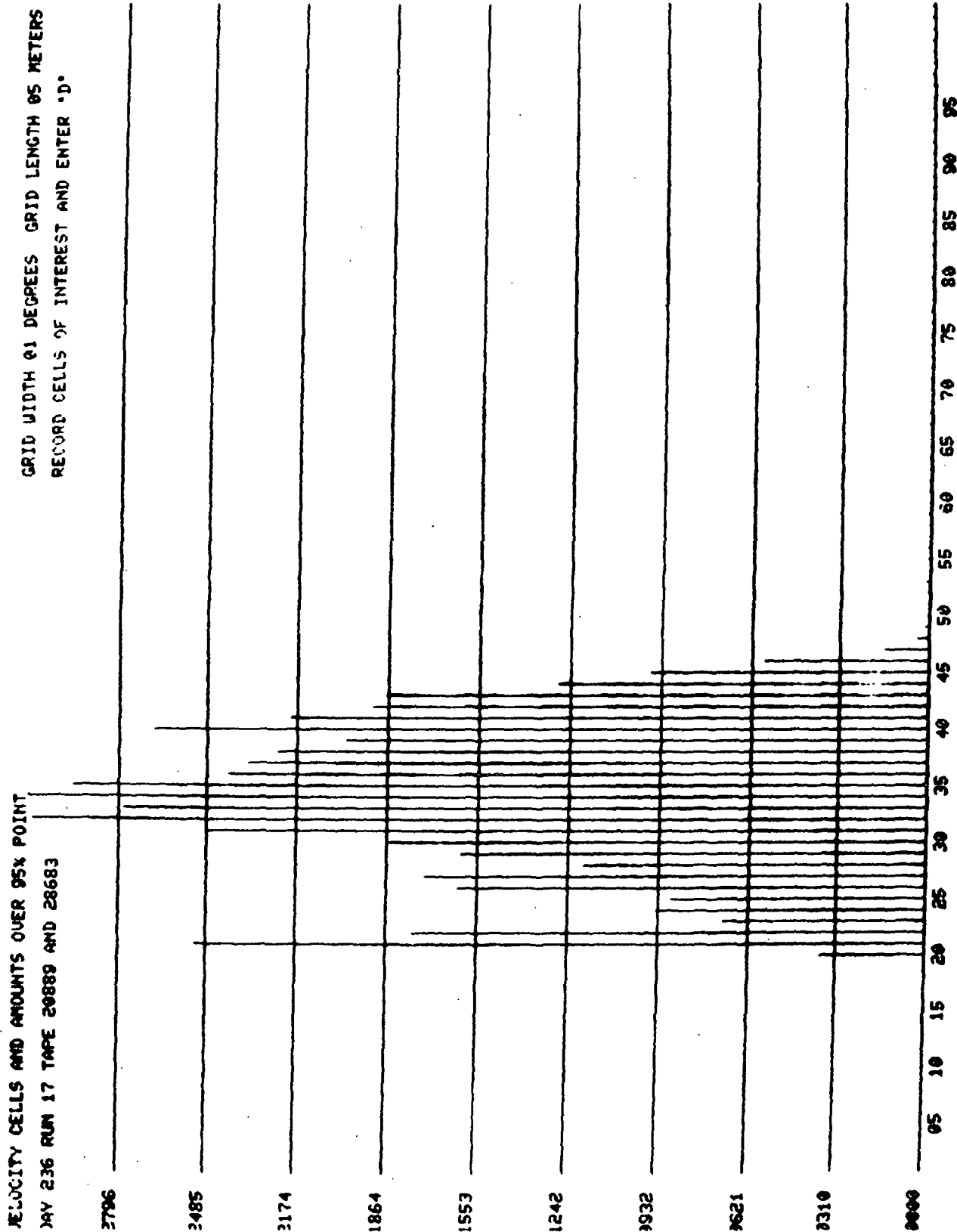
41 IF(NPLOTS.EQ.999) GO TO 28

28 CONTINUE

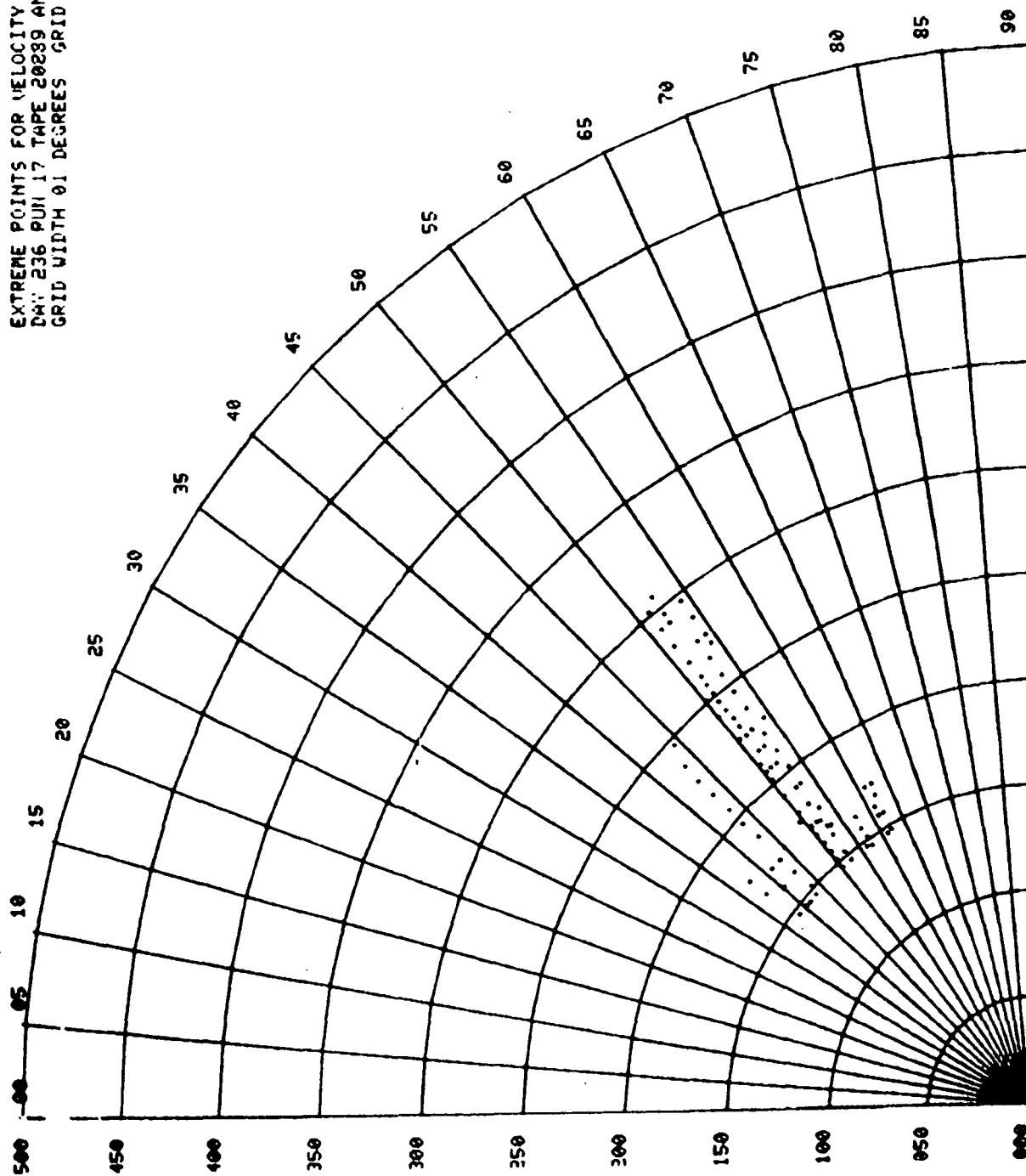
RETURN

END

APPENDIX III
UNTRANSLATED HARDCOPIES

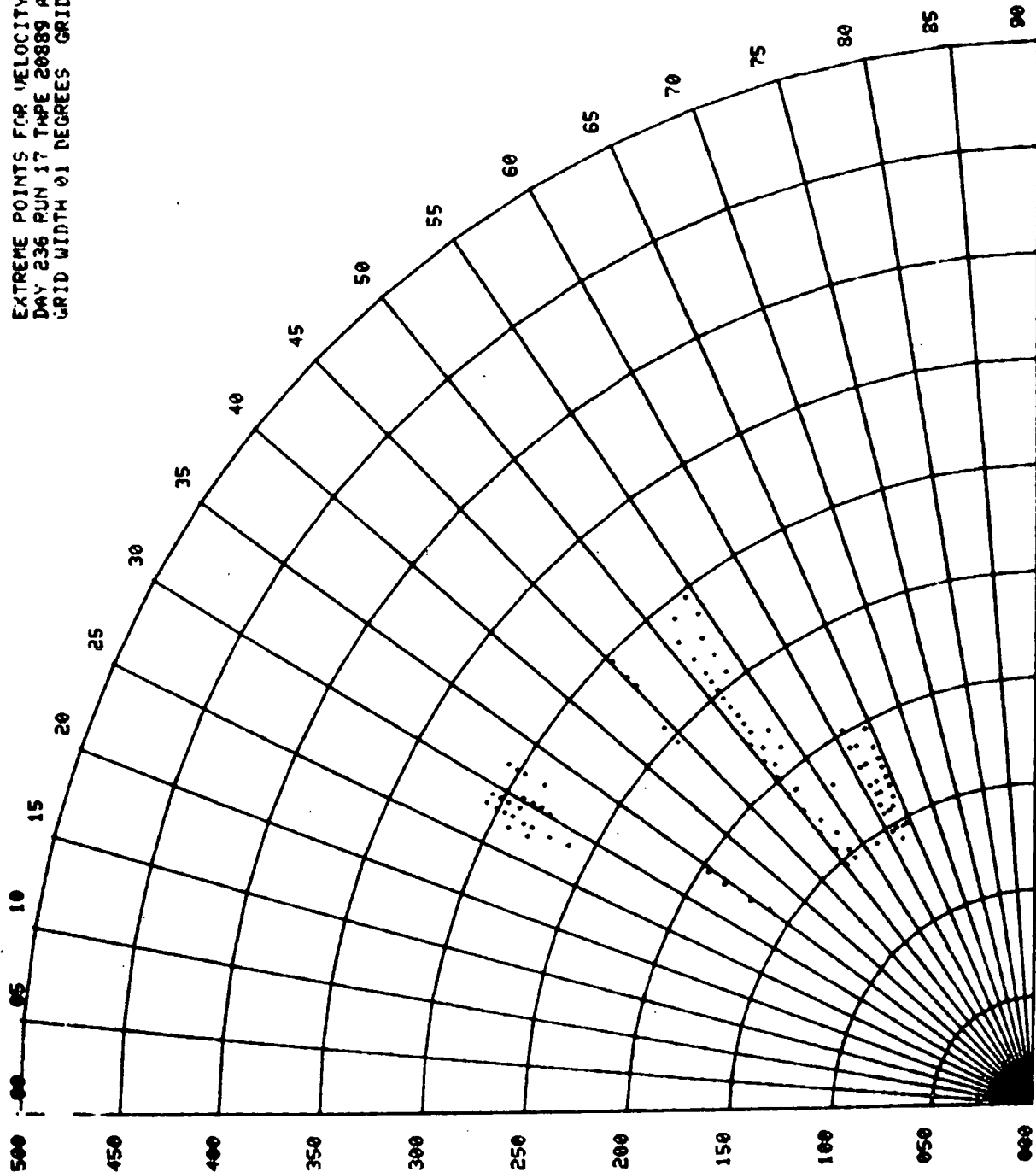


EXTREME POINTS FOR VELOCITY CELL 032 95 PERCENT
DA: 236 PUH 17 TAPE 20289 AND 28683
GRID WIDTH 01 DEGREES GRID LENGTH 05 METERS



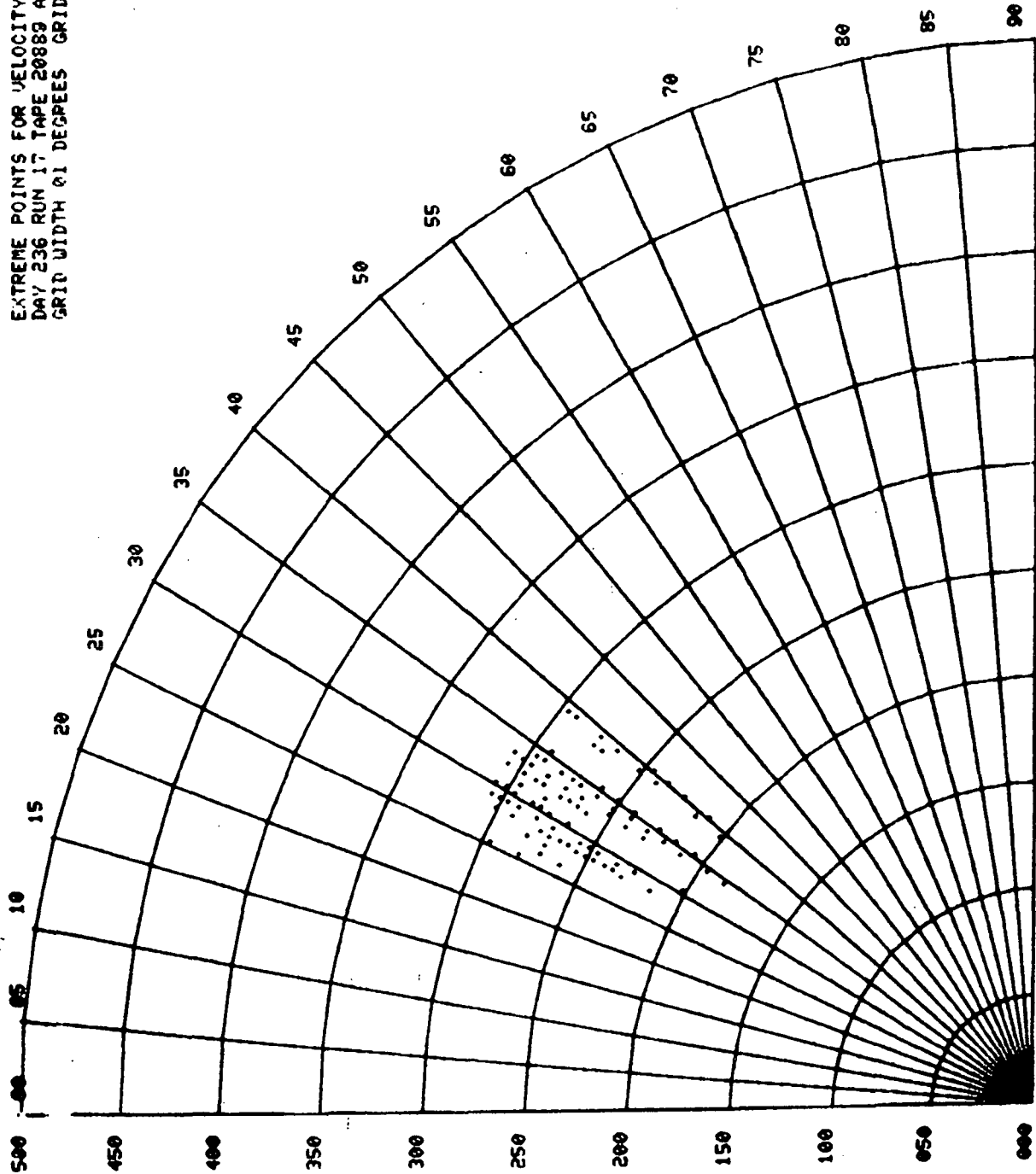
ENTER 'D' TO CONTINUE

EXTREME POINTS FOR VELOCITY CELL 034 95 PERCENT
DAY 236 RUN 17 TAPE 20889 AND 28683
GRID WIDTH 01 DEGREES GRID LENGTH 05 METERS



ENTER 'D' TO CONTINUE

EXTREME POINTS FOR VELOCITY CELL 040 95 PERCENT
DAY 236 RUN 17 TAPE 20889 AND 28683
GRID WIDTH 01 DEGREES GRID LENGTH 05 METERS



ENTER 'D' TO CONTINUE

NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20282
 * SCAN # 1 FRAME # 2138 ANGLE 9.183 TO FRAME # 2768 ANGLE 64.516 CRITICAL WMP AT CELL 34

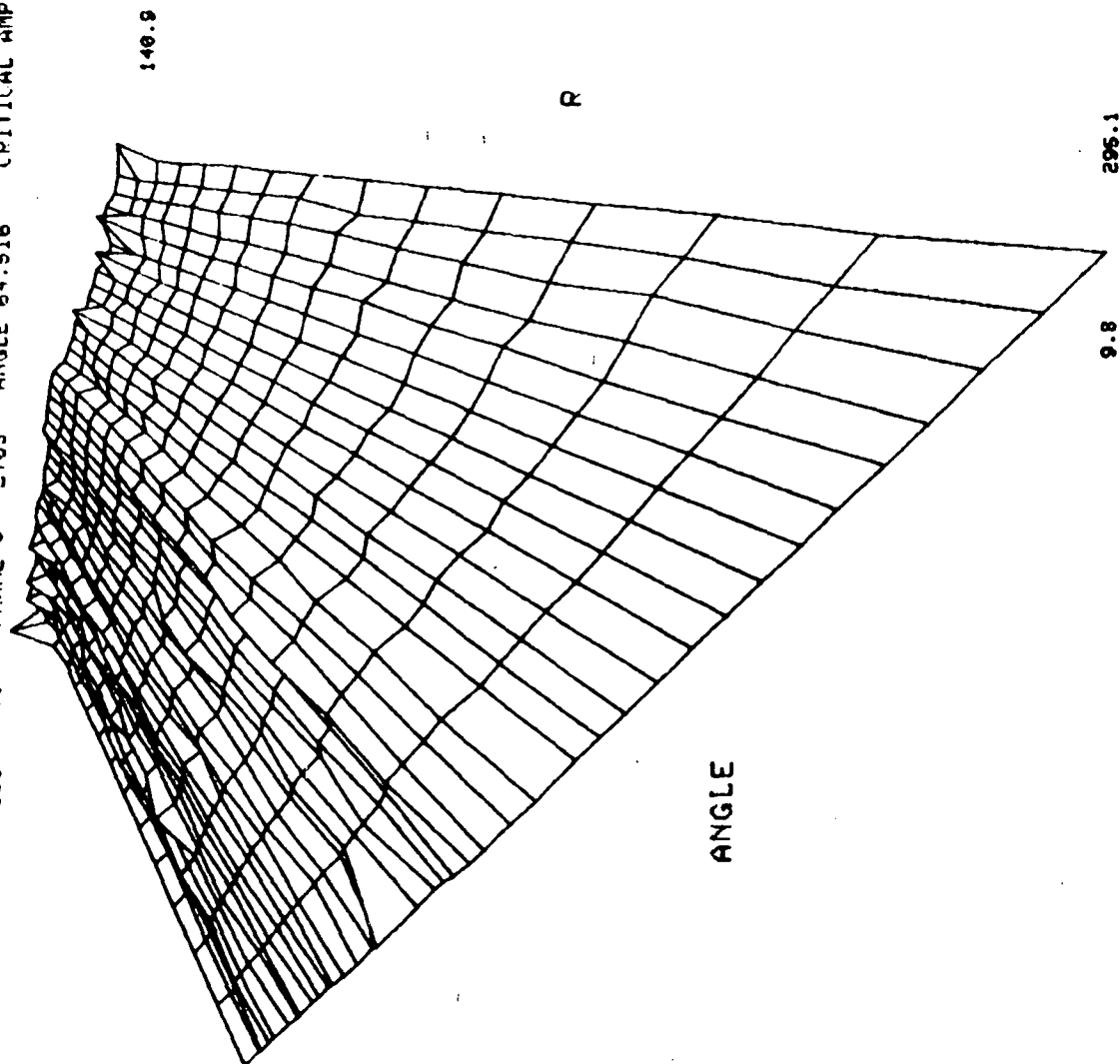
OPTION # 11

MAXIMUM I - 150.0

AVERAGE I - 89.4

ANGLE
 1 9.8
 2 10.2
 3 11.0
 4 12.1
 5 13.3
 6 14.7
 7 16.3
 8 17.7
 9 19.3
 10 20.8
 11 22.2
 12 23.7
 13 25.2
 14 26.7
 15 28.2
 16 29.7
 17 31.2
 18 32.7
 19 34.1
 20 35.7
 21 37.2
 22 38.6
 23 40.1
 24 41.6
 25 43.0
 26 44.4
 27 45.9
 28 47.4
 29 48.9
 30 50.3
 31 51.7
 32 53.3
 33 54.8
 34 56.2
 35 57.8
 36 59.3
 37 60.7
 38 62.3
 39 63.7
 40 64.3
 41 64.2

P
 1 140.9
 2 151.2
 3 161.5
 4 171.8
 5 182.1
 6 192.3
 7 202.6
 8 212.9
 9 223.2
 10 233.4
 11 243.7
 12 254.0
 13 264.3
 14 274.5
 15 285.1



IMAX, R, A DISPLAY

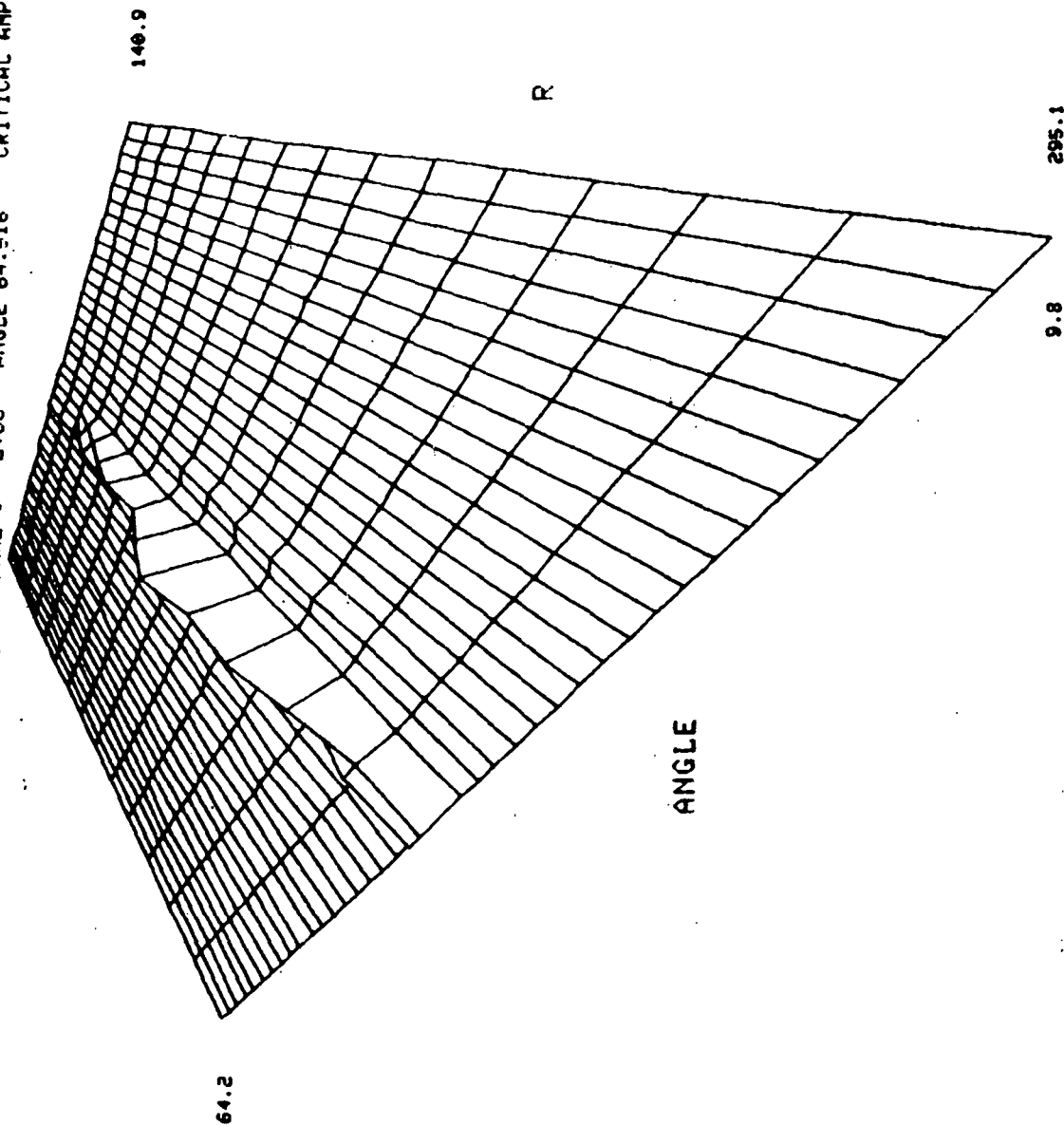
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 1 FRAME # 2138 ANGLE 9.138 TO FRAME # 2762 ANGLE 64.516 CRITICAL AMP WT CELL 34
 OPTION # 12

MAXIMUM I - 89.0

AVERAGE I - 2.8

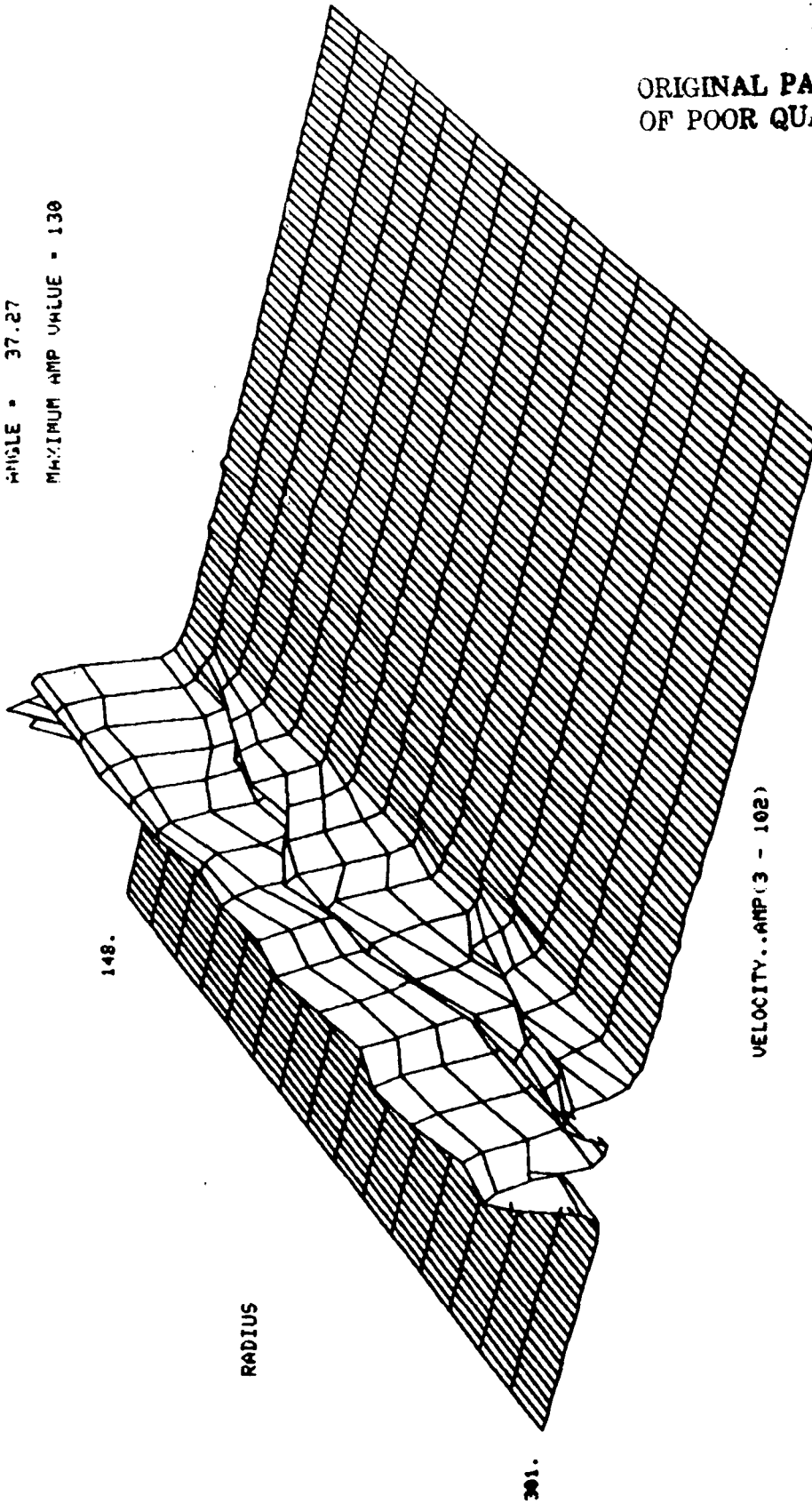
ANGLE
 1 9.8
 2 10.2
 3 11.0
 4 12.1
 5 13.3
 6 14.7
 7 16.3
 8 17.7
 9 19.3
 10 20.8
 11 22.2
 12 23.7
 13 25.2
 14 26.7
 15 28.2
 16 29.7
 17 31.2
 18 32.7
 19 34.1
 20 35.7
 21 37.2
 22 38.6
 23 40.1
 24 41.6
 25 43.0
 26 44.4
 27 45.9
 28 47.4
 29 48.9
 30 50.3
 31 51.7
 32 53.3
 33 54.8
 34 56.2
 35 57.8
 36 59.3
 37 60.7
 38 62.3
 39 63.7
 40 64.3
 41 64.2

R
 1 140.9
 2 151.2
 3 161.5
 4 171.8
 5 182.1
 6 192.3
 7 202.6
 8 212.9
 9 223.2
 10 233.4
 11 243.7
 12 254.0
 13 264.3
 14 274.5
 15 295.1



I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 1 FRAME # 2138 ANGLE 9.128 TO FRAME # 2768 ANGLE 64.516 CRITICAL AMP AT CELL 34
 FRAME # 2451 TO 2467
 ANGLE - 37.27
 MAXIMUM AMP VALUE - 130



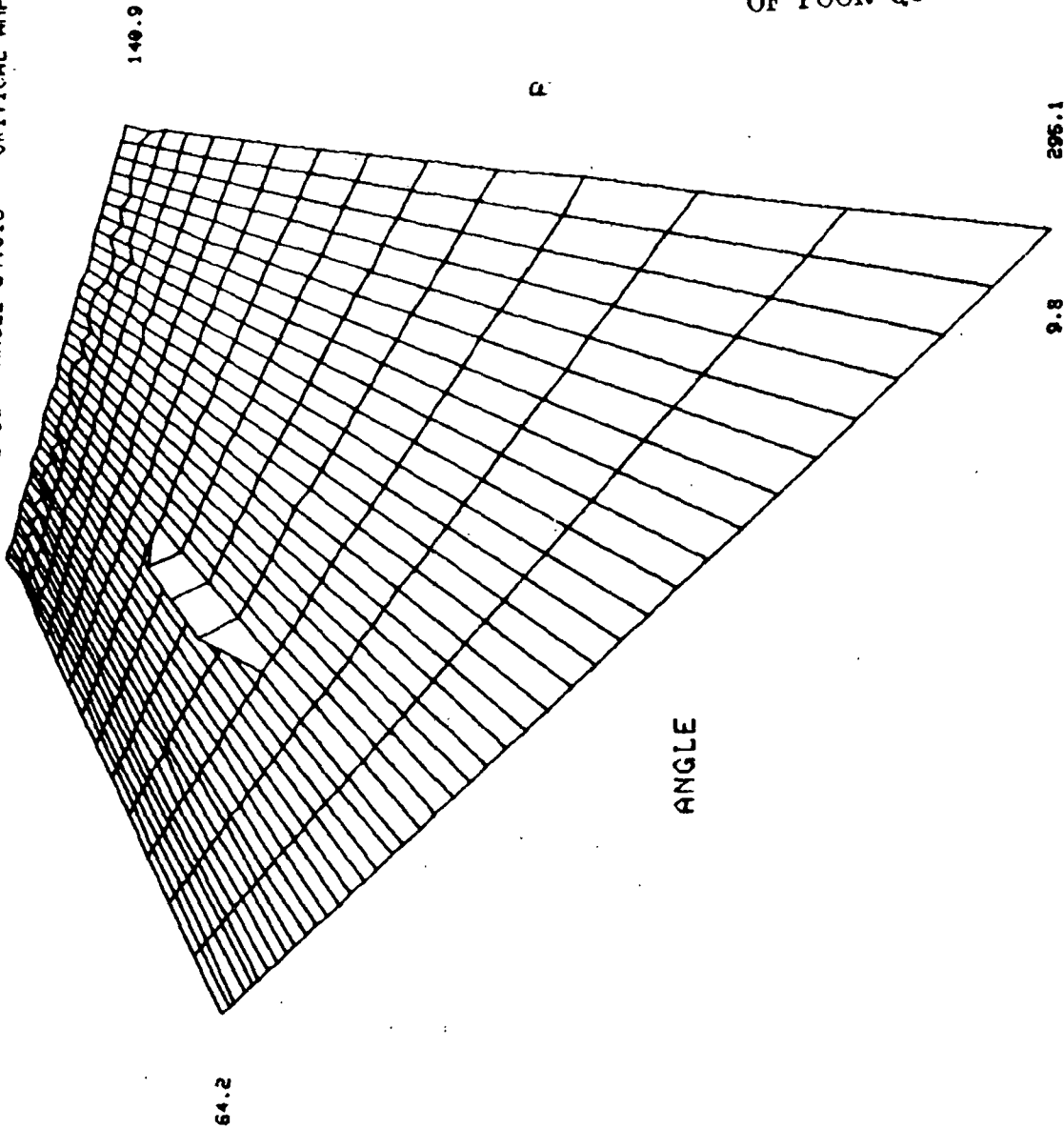
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OF POOR QUALITY

NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 1 FRAME # 2138 ANGLE 9.183 TO FRAME # 2769 ANGLE 64.516 CRITICAL WMP AT CELL 34
 OPTION # 21

MAXIMUM U - 42.0
 AVERAGE U - 28.1

ANGLE
 1 9.8
 2 10.2
 3 11.0
 4 12.1
 5 13.3
 6 14.7
 7 16.3
 8 17.7
 9 19.3
 10 20.8
 11 22.2
 12 23.7
 13 25.2
 14 26.7
 15 28.2
 16 29.7
 17 31.2
 18 32.7
 19 34.1
 20 35.7
 21 37.2
 22 38.6
 23 40.1
 24 41.6
 25 43.0
 26 44.4
 27 45.9
 28 47.4
 29 48.9
 30 50.3
 31 51.7
 32 53.3
 33 54.8
 34 56.2
 35 57.8
 36 59.3
 37 60.7
 38 62.3
 39 63.7
 40 64.3
 41 64.2

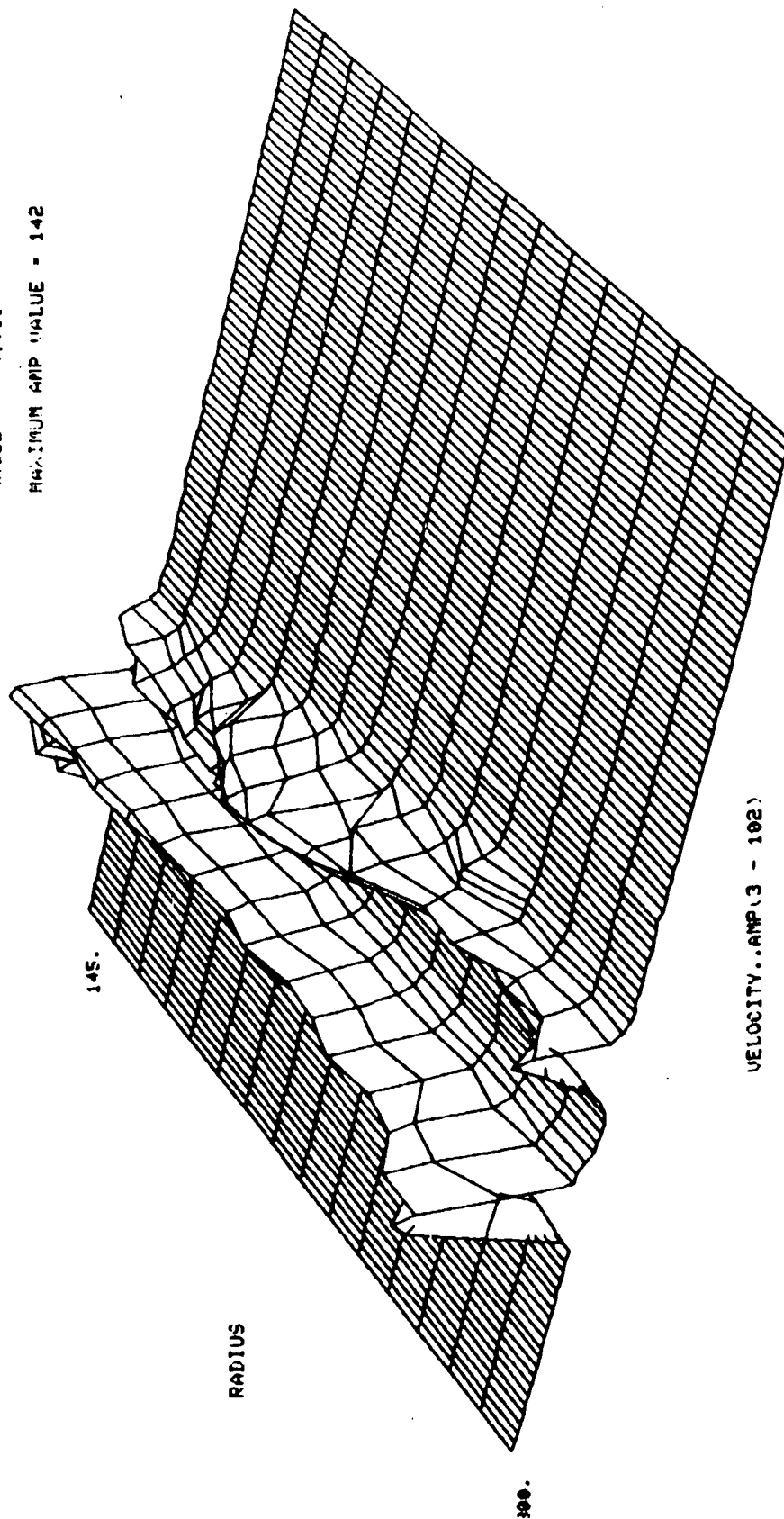
R
 1 140.9
 2 151.2
 3 161.5
 4 171.8
 5 182.1
 6 192.3
 7 202.6
 8 212.9
 9 223.2
 10 233.4
 11 243.7
 12 254.0
 13 264.3
 14 274.5
 15 285.1



U, R, A DISPLAY (VELOCITY AT I_{MAX})

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 1 FRAME # 2138 ANGLE 9.188 TO FRAME # 2768 ANGLE 64.516 CRITICAL AMP AT CELL 34
 FRAME # 2482 TO 2498
 ANGLE - 40.15
 MAXIMUM AMP VALUE - 142



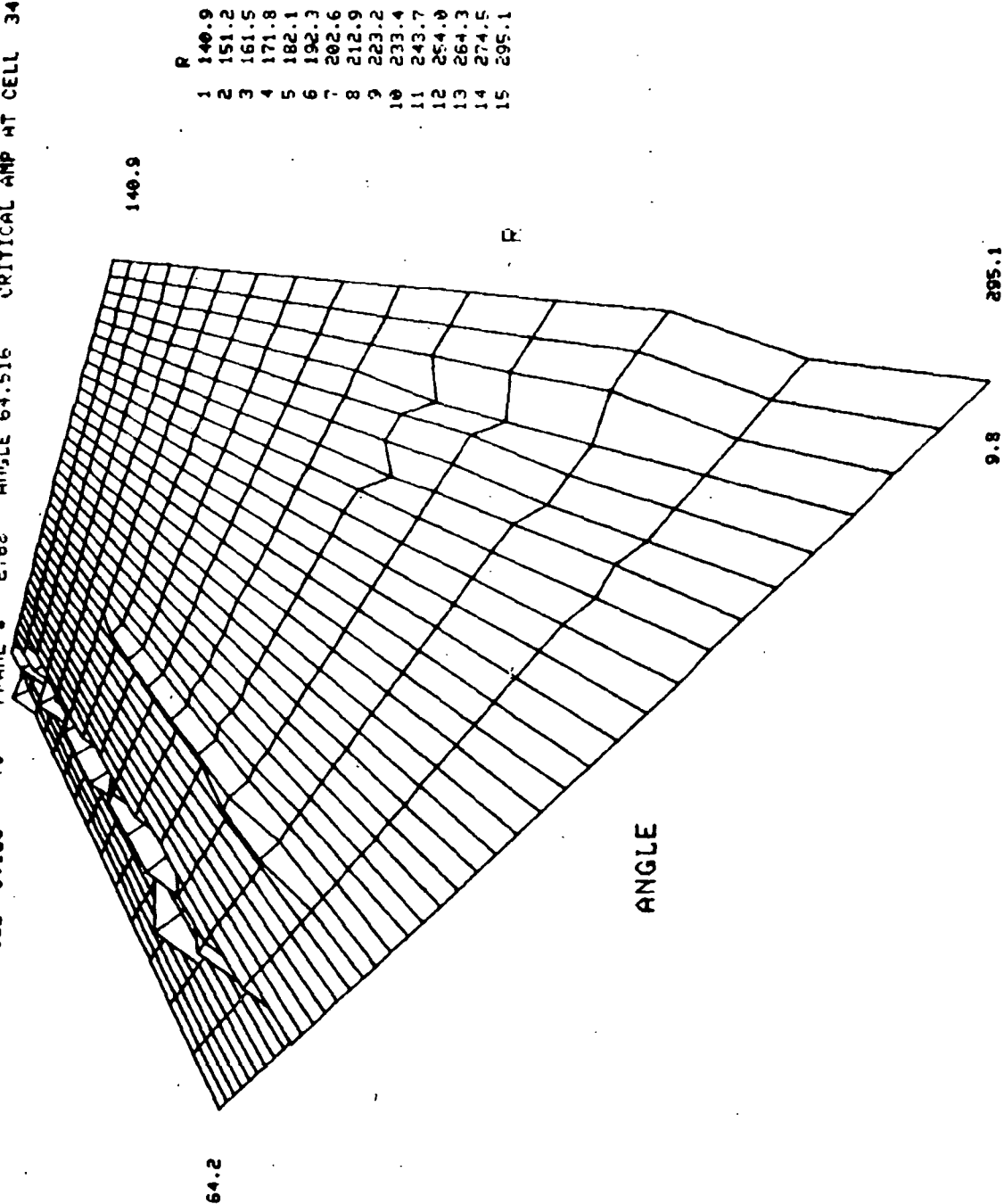
NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 1 FRAME # 2138 ANGLE 9.128 TO FRAME # 2768 ANGLE 64.516 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U = 44.0

AVERAGE U = 23.3

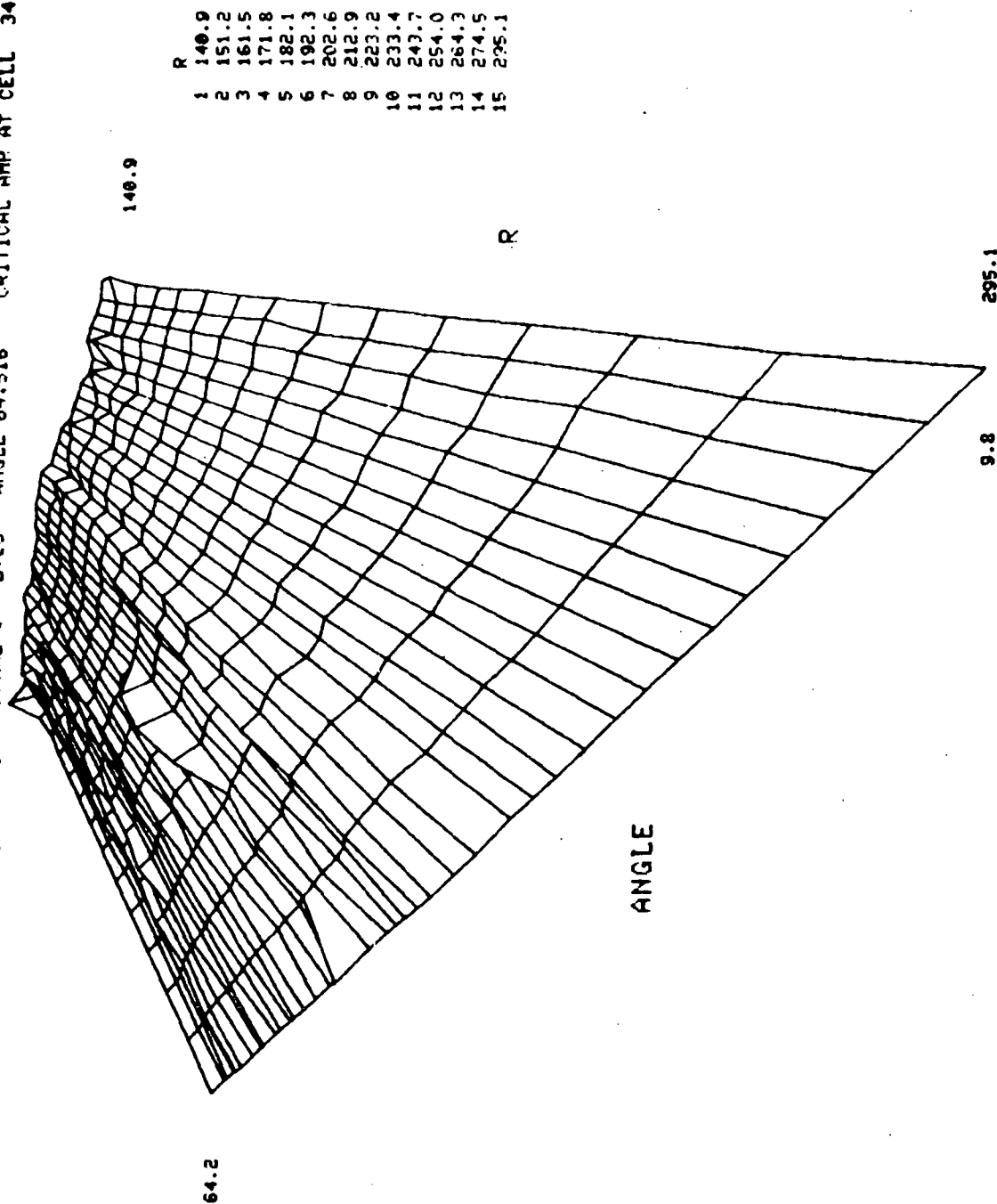
ANGLE
1 9.8
2 10.2
3 11.0
4 12.1
5 13.3
6 14.7
7 16.3
8 17.7
9 19.3
10 20.8
11 22.2
12 23.7
13 25.2
14 26.7
15 28.2
16 29.7
17 31.2
18 32.7
19 34.1
20 35.7
21 37.2
22 38.6
23 40.1
24 41.6
25 43.0
26 44.4
27 45.9
28 47.4
29 48.9
30 50.3
31 51.7
32 53.3
33 54.8
34 56.2
35 57.8
36 59.3
37 60.7
38 62.3
39 63.7
40 64.3
41 64.2



R
1 140.9
2 151.2
3 161.5
4 171.8
5 182.1
6 192.3
7 202.6
8 212.9
9 223.2
10 233.4
11 243.7
12 254.0
13 264.3
14 274.5
15 295.1

Umax, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 1 FRAME # 2138 ANGLE 9.138 TO FRAME # 2763 ANGLE 64.516 CRITICAL AMP AT CELL 34
 OPTION # 31



ANGLE
 1 9.8
 2 10.2
 3 11.0
 4 12.1
 5 13.3
 6 14.7
 7 16.3
 8 17.7
 9 19.3
 10 20.8
 11 22.2
 12 23.7
 13 25.2
 14 26.7
 15 28.2
 16 29.7
 17 31.2
 18 32.7
 19 34.1
 20 35.7
 21 37.2
 22 38.6
 23 40.1
 24 41.6
 25 43.0
 26 44.4
 27 45.9
 28 47.4
 29 48.9
 30 50.3
 31 51.7
 32 53.3
 33 54.8
 34 56.2
 35 57.8
 36 59.3
 37 60.7
 38 62.3
 39 63.7
 40 64.3
 41 64.2

R
 1 140.9
 2 151.2
 3 161.5
 4 171.8
 5 182.1
 6 192.3
 7 202.6
 8 212.9
 9 223.2
 10 233.4
 11 243.7
 12 254.0
 13 264.3
 14 274.5
 15 285.1

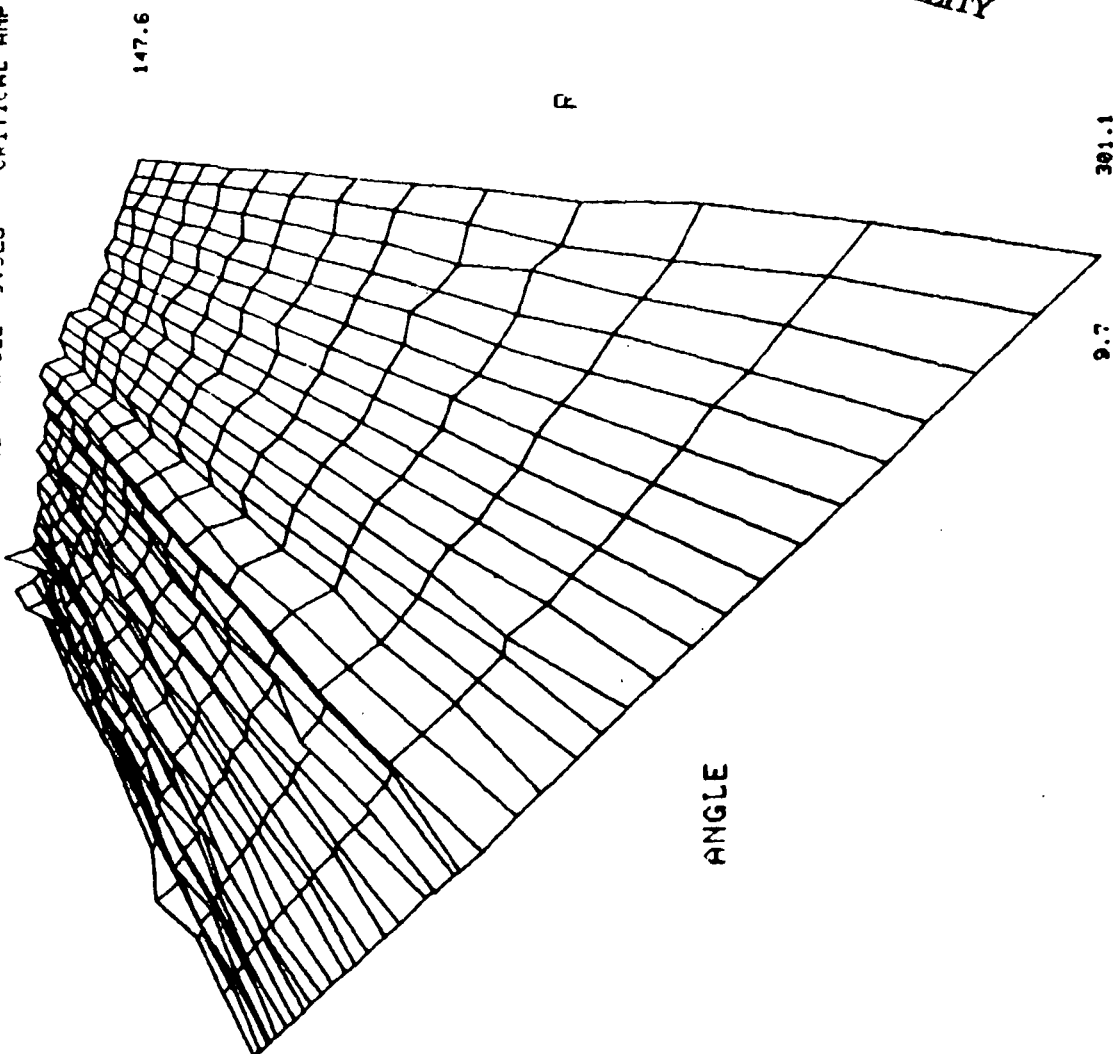
U X I max, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 1 OF 2-20339
 SCAN # 2 FRAME # 2768 ANGLE 64.516 TO FRAME # 3381 ANGLE 3.523 CRITICAL AMP AT CELL 34
 OPTION # 11

MAXIMUM I - 142.0
 AVERAGE I - 75.6

ANGLE
1 64.3
2 63.7
3 62.9
4 61.8
5 60.4
6 59.1
7 57.6
8 56.0
9 54.5
10 53.1
11 51.6
12 50.1
13 48.6
14 47.3
15 45.8
16 44.3
17 42.9
18 41.4
19 40.0
20 38.4
21 37.0
22 35.5
23 34.0
24 32.4
25 30.9
26 29.4
27 28.0
28 26.5
29 25.0
30 23.4
31 21.9
32 20.4
33 18.9
34 17.4
35 15.8
36 14.3
37 12.8
38 11.3
39 10.0
40 9.7

R
1 147.6
2 158.5
3 169.5
4 180.5
5 191.4
6 202.4
7 213.4
8 224.3
9 235.3
10 246.3
11 257.2
12 268.2
13 279.2
14 301.1

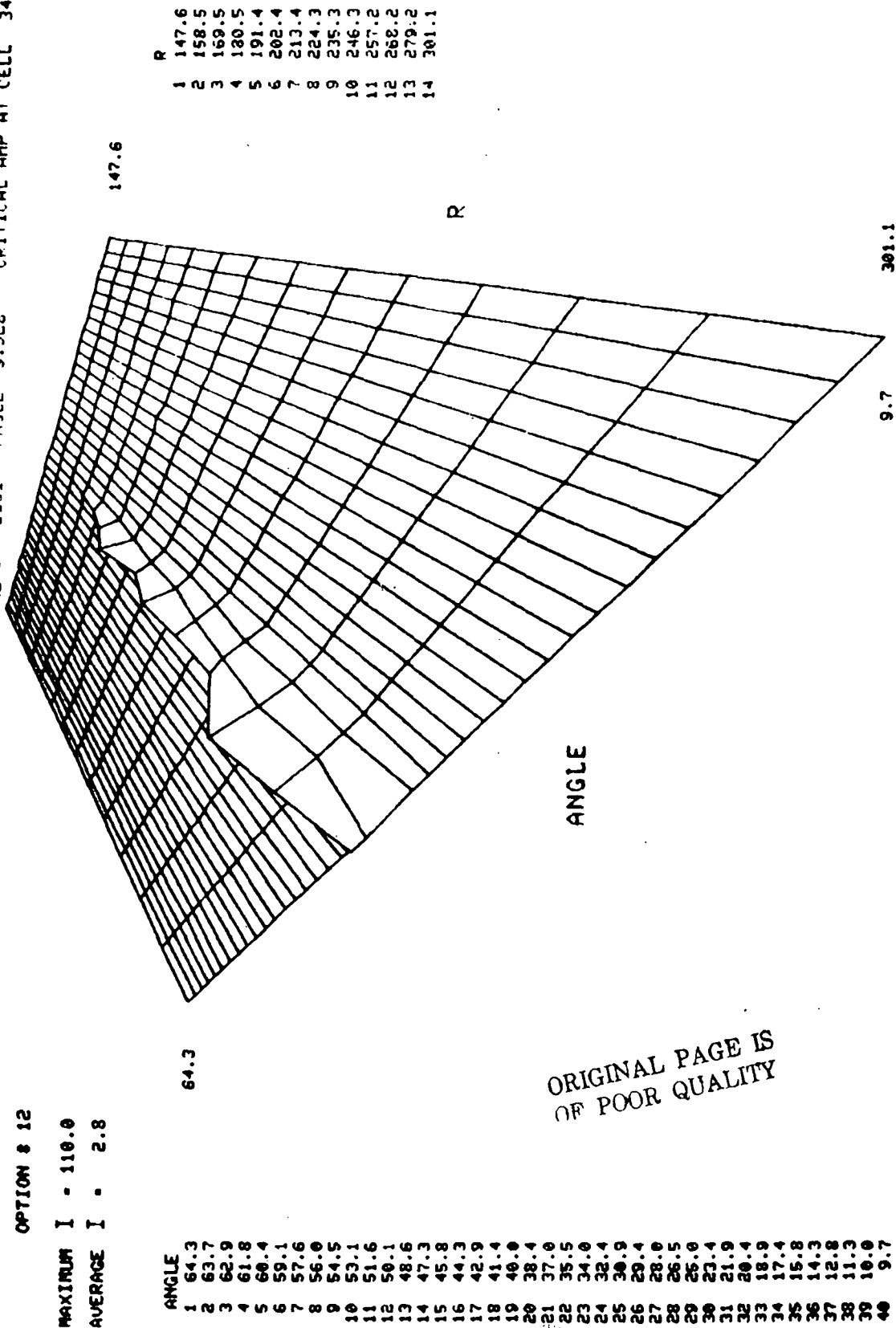


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I_{max}, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20329
 SCAN # 2 FRAME # 2768 ANGLE 64.516 TO FRAME # 3381 ANGLE 9.528 CRITICAL AMP AT CELL 34
 OPTION # 12

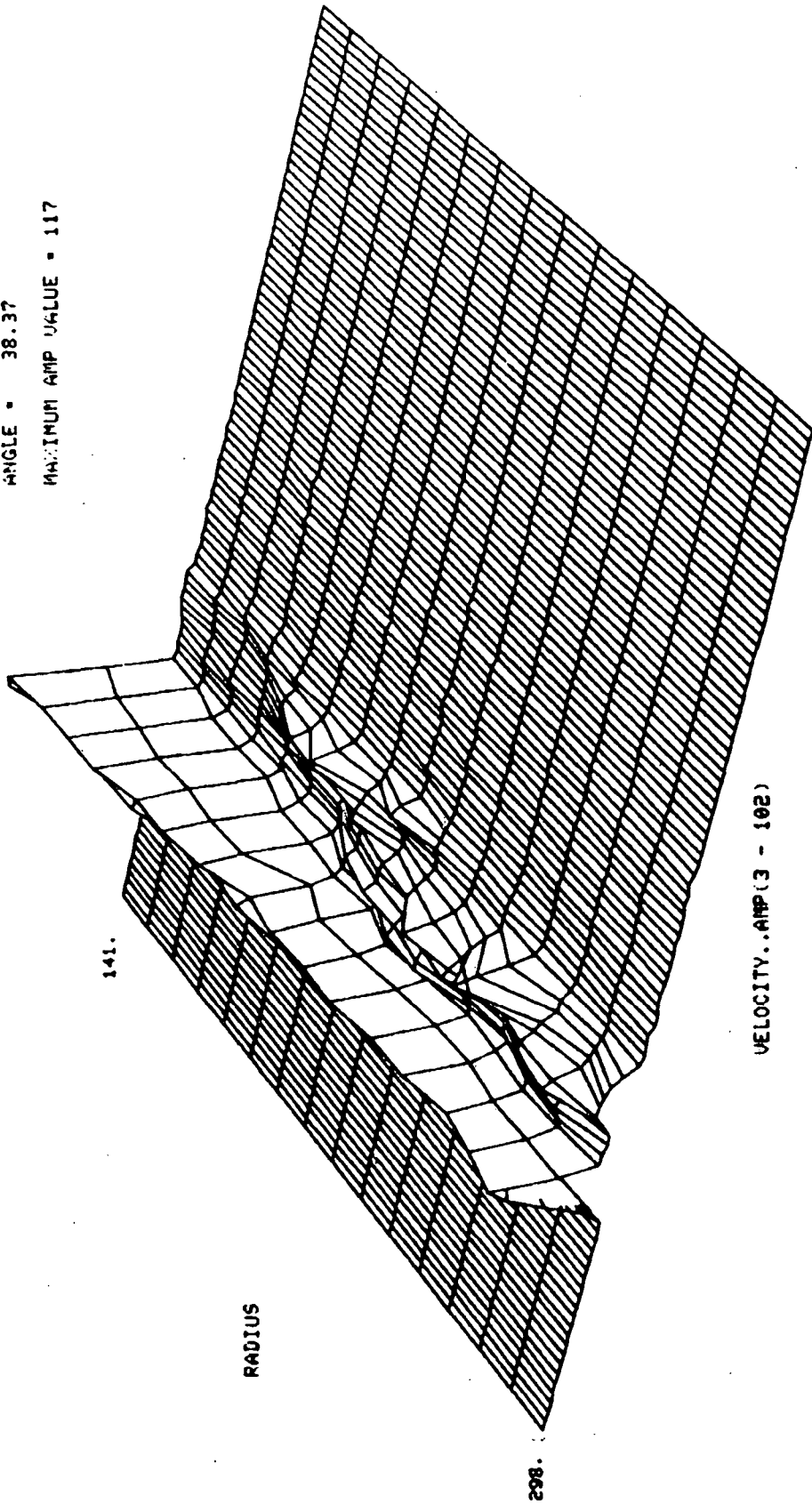
MAXIMUM I - 110.0
 AVERAGE I - 2.8



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I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 2 FRAME # 2768 ANGLE 64.516 TO FRAME # 3381 ANGLE 9.528 CRITICAL AMP AT CELL 34
 FRAME # 3061 TO 3077
 ANGLE = 38.37
 MAXIMUM AMP VALUE = 117

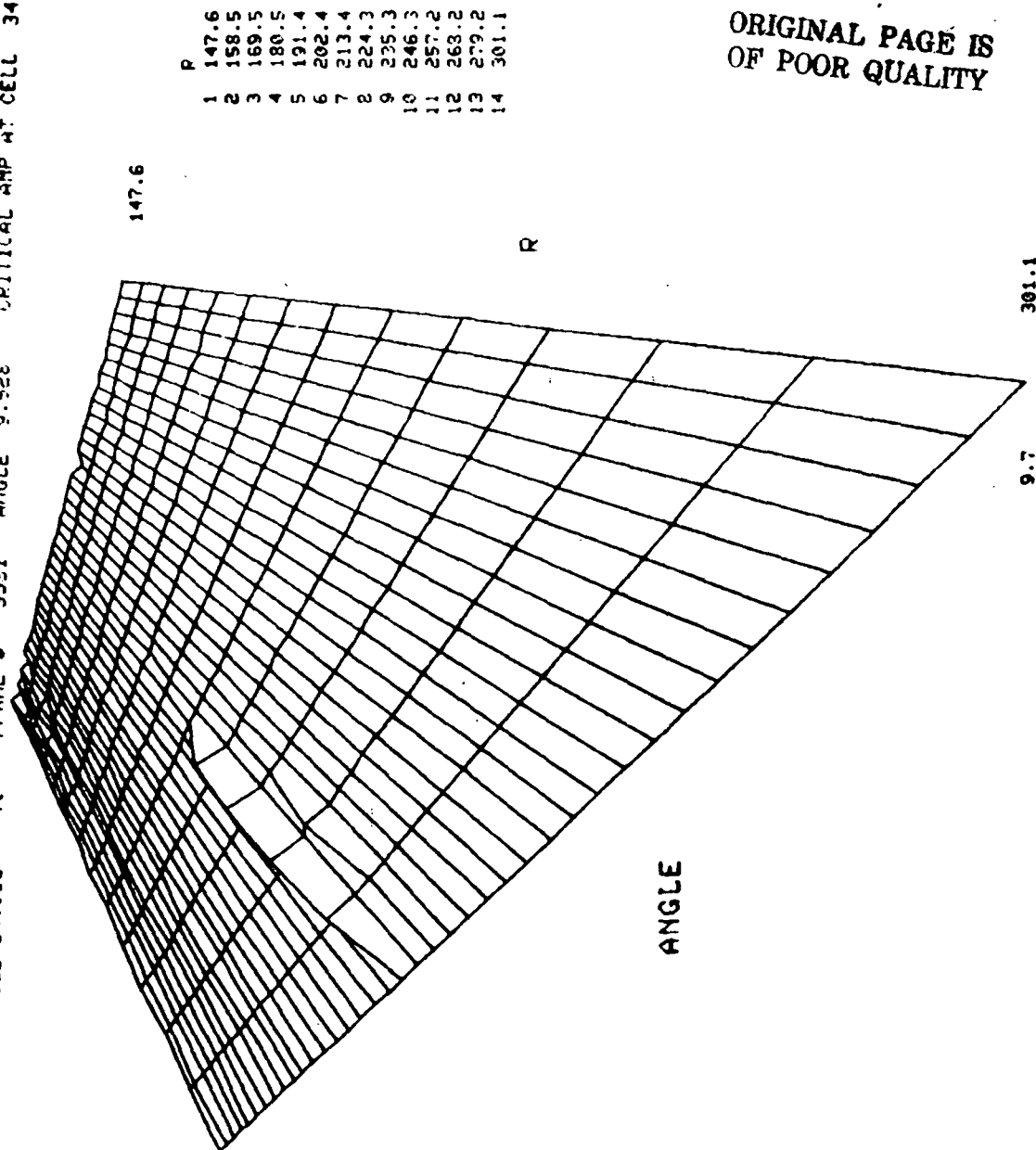


NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 2 FRAME # 2768 ANGLE 64.516 TO FRAME # 3351 ANGLE 9.528 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 40.0
 AVERAGE U - 28.4

ANGLE
 1 64.3
 2 63.7
 3 62.9
 4 61.8
 5 60.4
 6 59.1
 7 57.6
 8 56.0
 9 54.5
 10 53.1
 11 51.6
 12 50.1
 13 48.6
 14 47.3
 15 45.8
 16 44.3
 17 42.9
 18 41.4
 19 40.0
 20 38.4
 21 37.0
 22 35.5
 23 34.0
 24 32.4
 25 30.9
 26 29.4
 27 28.0
 28 26.5
 29 25.0
 30 23.4
 31 21.9
 32 20.4
 33 18.9
 34 17.4
 35 15.8
 36 14.3
 37 12.8
 38 11.3
 39 10.0
 40 9.7

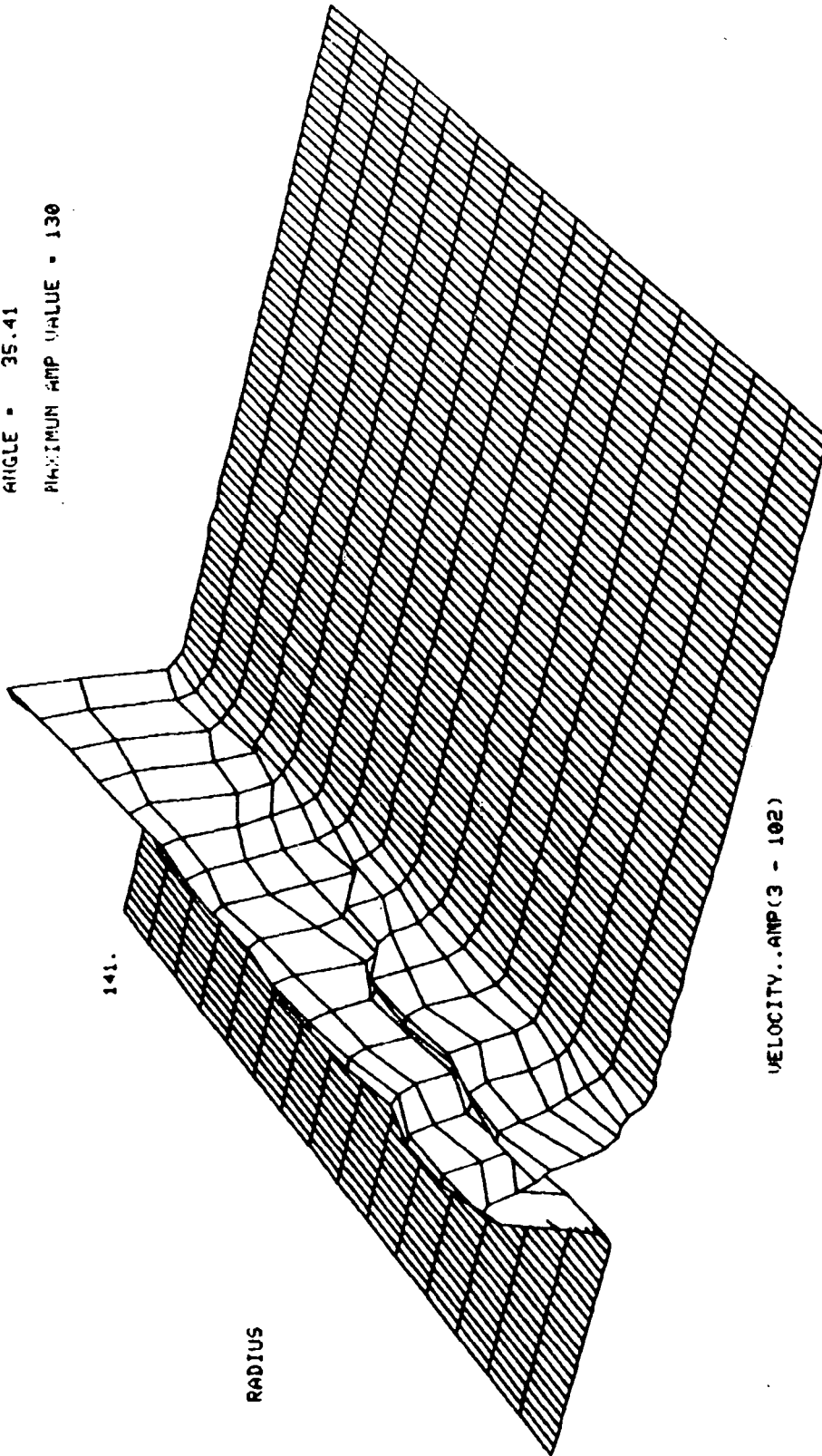


R
 1 147.6
 2 158.5
 3 169.5
 4 180.5
 5 191.4
 6 202.4
 7 213.4
 8 224.3
 9 235.3
 10 246.3
 11 257.2
 12 268.2
 13 279.2
 14 301.1

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U, R, A DISPLAY (VELOCITY AT IMAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 2 FRAME # 2768 ANGLE 64.516 TO FRAME # 3381 ANGLE 9.528 CRITICAL AMP AT CELL 34
 FRAME # 3092 TO 3108
 ANGLE - 35.41
 MAXIMUM AMP VALUE - 130



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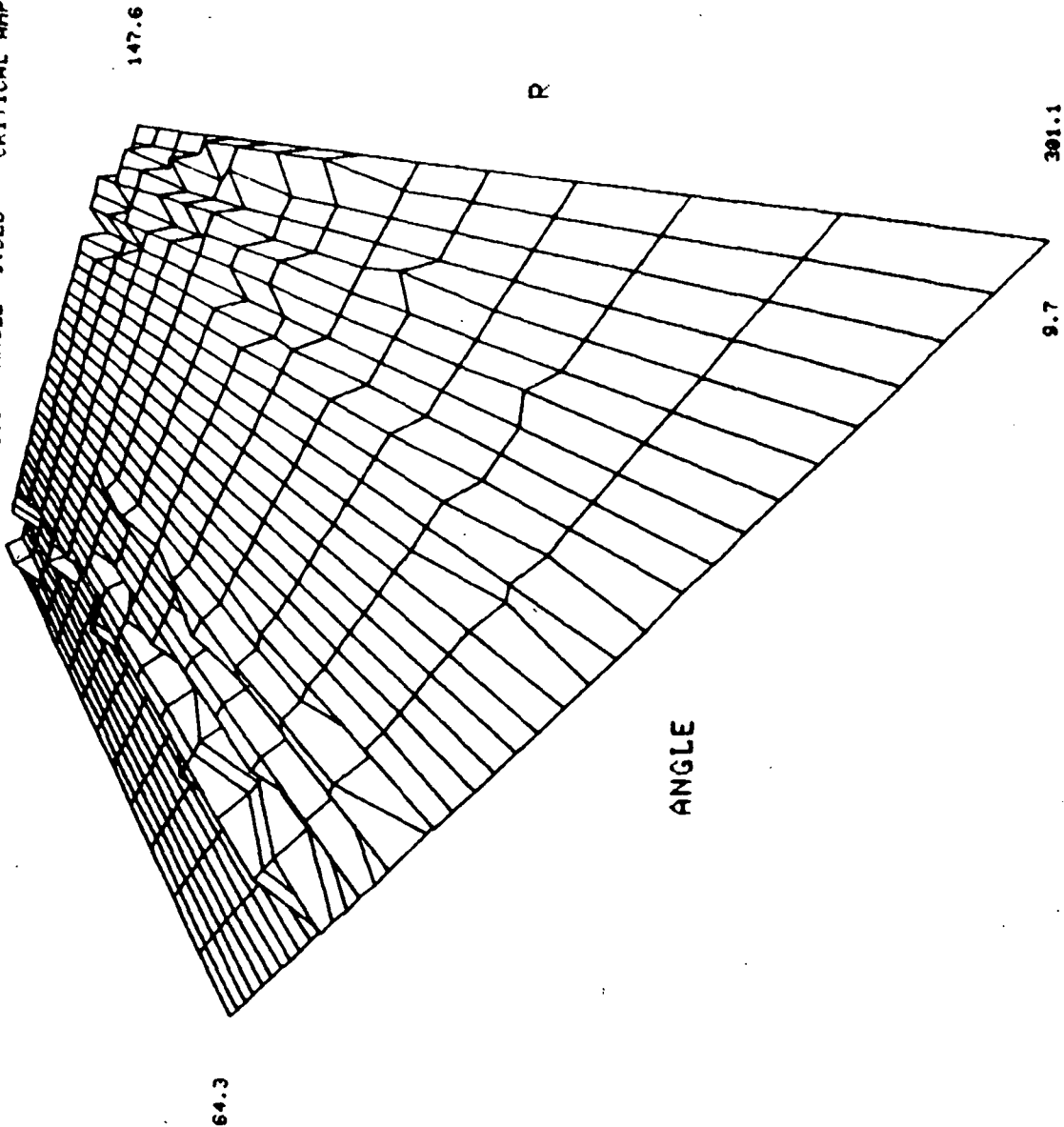
298.

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 2 FRAME # 2768 ANGLE 64.516 TO FRAME # 3391 ANGLE 9.528 CRITICAL AMP AT CELL 34
 OPTION # 22

MAXIMUM U - 43.0
 AVERAGE U - 17.3

ANGLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
	64.3	63.7	62.9	61.8	60.4	59.1	57.6	56.0	54.5	53.1	51.6	50.1	48.6	47.3	45.8	44.3	42.9	41.4	40.0	38.4	37.0	35.5	34.0	32.4	30.9	29.4	28.0	26.5	25.0	23.4	21.9	20.4	18.9	17.4	15.8	14.3	12.8	11.3	10.0	9.7

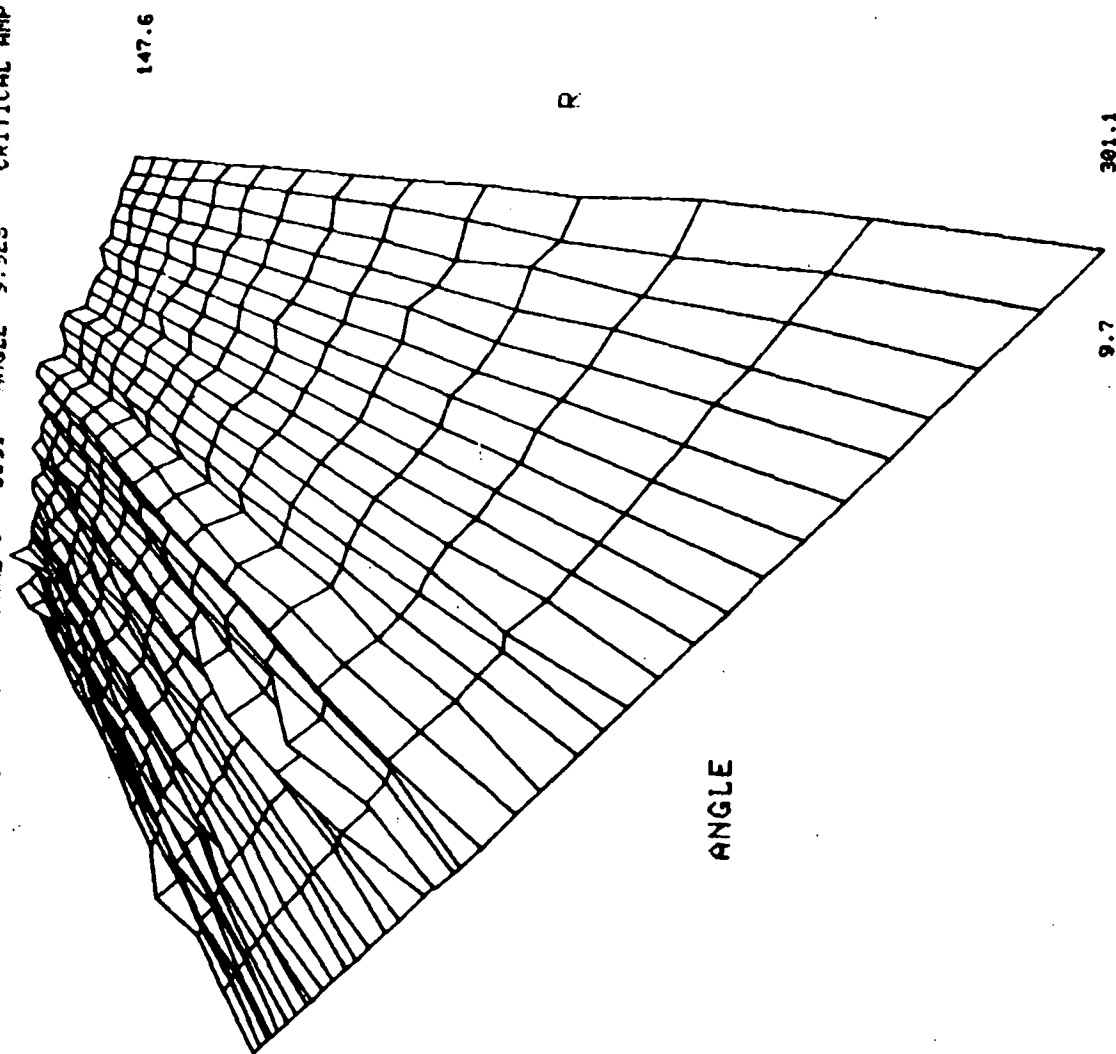
R	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	147.6	158.5	169.5	180.5	191.4	202.4	213.4	224.3	235.3	246.3	257.2	268.2	279.2	301.1



UMAX, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 2 FRAME # 2768 ANGLE 64.516 TO FRAME # 3351 ANGLE 9.528 CRITICAL AMP AT CELL 34
 OPTION # 31

ANGLE
 1 64.3
 2 63.7
 3 62.9
 4 61.8
 5 60.4
 6 59.1
 7 57.6
 8 56.0
 9 54.5
 10 53.1
 11 51.6
 12 50.1
 13 48.6
 14 47.3
 15 45.8
 16 44.3
 17 42.9
 18 41.4
 19 40.0
 20 38.4
 21 37.0
 22 35.5
 23 34.0
 24 32.4
 25 30.9
 26 29.4
 27 28.0
 28 26.5
 29 25.0
 30 23.4
 31 21.9
 32 20.4
 33 18.9
 34 17.4
 35 15.8
 36 14.3
 37 12.8
 38 11.3
 39 10.0
 40 9.7



R
 1 147.6
 2 158.5
 3 169.5
 4 180.5
 5 191.4
 6 202.4
 7 213.4
 8 224.3
 9 235.3
 10 246.3
 11 257.2
 12 268.2
 13 279.2
 14 301.1

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U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20299
 * SCAN # 3 FRAME # 3391 ANGLE 9.523 TO FRAME # 4002 ANGLE 64.694 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 132.0

AVERAGE I - 63.7

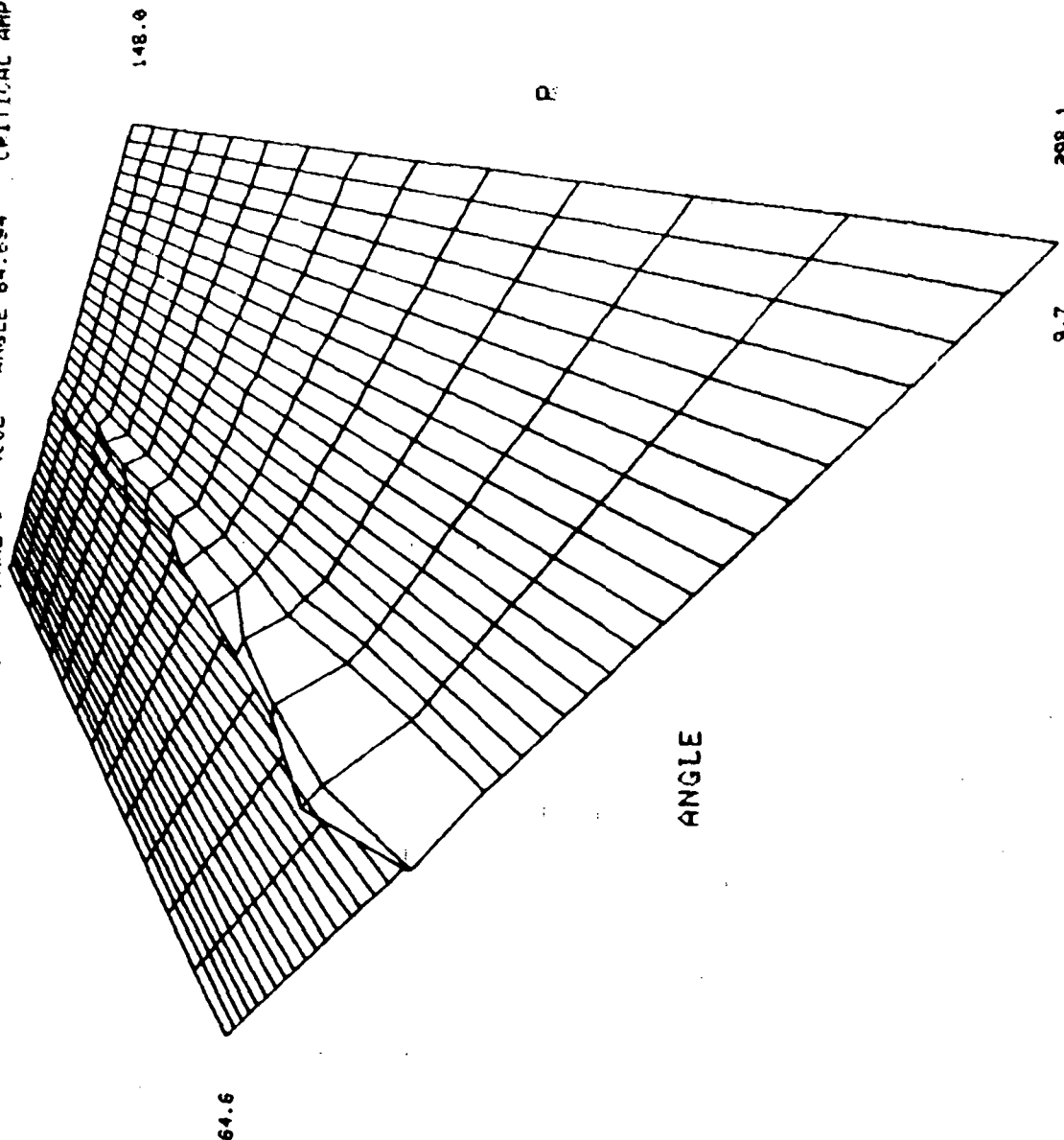
ANGLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
9.7	148.0	158.7	169.4	180.2	190.9	201.6	212.3	223.0	233.7	244.5	255.2	265.9	276.6	287.3	298.1	308.8	319.5	330.2	340.9	351.6	362.3	373.0	383.7	394.4	405.1	415.8	426.5	437.2	447.9	458.6	469.3	480.0	490.7	501.4	512.1	522.8	533.5	544.2	554.9	565.6	576.3	587.0	597.7	608.4	619.1	629.8	640.5	651.2	661.9	672.6	683.3	694.0	704.7	715.4	726.1	736.8	747.5	758.2	768.9	779.6	790.3	801.0	811.7	822.4	833.1	843.8	854.5	865.2	875.9	886.6	897.3	908.0	918.7	929.4	940.1	950.8	961.5	972.2	982.9	993.6	1004.3	1015.0	1025.7	1036.4	1047.1	1057.8	1068.5	1079.2	1089.9	1100.6	1111.3	1122.0	1132.7	1143.4	1154.1	1164.8	1175.5	1186.2	1196.9	1207.6	1218.3	1229.0	1239.7	1250.4	1261.1	1271.8	1282.5	1293.2	1303.9	1314.6	1325.3	1336.0	1346.7	1357.4	1368.1	1378.8	1389.5	1400.2	1410.9	1421.6	1432.3	1443.0	1453.7	1464.4	1475.1	1485.8	1496.5	1507.2	1517.9	1528.6	1539.3	1550.0	1560.7	1571.4	1582.1	1592.8	1603.5	1614.2	1624.9	1635.6	1646.3	1657.0	1667.7	1678.4	1689.1	1700.8	1711.5	1722.2	1732.9	1743.6	1754.3	1765.0	1775.7	1786.4	1797.1	1807.8	1818.5	1829.2	1839.9	1850.6	1861.3	1872.0	1882.7	1893.4	1904.1	1914.8	1925.5	1936.2	1946.9	1957.6	1968.3	1979.0	1989.7	2000.4	2011.1	2021.8	2032.5	2043.2	2053.9	2064.6	2075.3	2086.0	2096.7	2107.4	2118.1	2128.8	2139.5	2150.2	2160.9	2171.6	2182.3	2193.0	2203.7	2214.4	2225.1	2235.8	2246.5	2257.2	2267.9	2278.6	2289.3	2300.0	2310.7	2321.4	2332.1	2342.8	2353.5	2364.2	2374.9	2385.6	2396.3	2407.0	2417.7	2428.4	2439.1	2449.8	2460.5	2471.2	2481.9	2492.6	2503.3	2514.0	2524.7	2535.4	2546.1	2556.8	2567.5	2578.2	2588.9	2599.6	2610.3	2621.0	2631.7	2642.4	2653.1	2663.8	2674.5	2685.2	2695.9	2706.6	2717.3	2728.0	2738.7	2749.4	2760.1	2770.8	2781.5	2792.2	2802.9	2813.6	2824.3	2835.0	2845.7	2856.4	2867.1	2877.8	2888.5	2899.2	2910.9	2921.6	2932.3	2943.0	2953.7	2964.4	2975.1	2985.8	2996.5	3007.2	3017.9	3028.6	3039.3	3050.0	3060.7	3071.4	3082.1	3092.8	3103.5	3114.2	3124.9	3135.6	3146.3	3157.0	3167.7	3178.4	3189.1	3200.8	3211.5	3222.2	3232.9	3243.6	3254.3	3265.0	3275.7	3286.4	3297.1	3307.8	3318.5	3329.2	3339.9	3350.6	3361.3	3372.0	3382.7	3393.4	3404.1	3414.8	3425.5	3436.2	3446.9	3457.6	3468.3	3479.0	3489.7	3500.4	3511.1	3521.8	3532.5	3543.2	3553.9	3564.6	3575.3	3586.0	3596.7	3607.4	3618.1	3628.8	3639.5	3650.2	3660.9	3671.6	3682.3	3693.0	3703.7	3714.4	3725.1	3735.8	3746.5	3757.2	3767.9	3778.6	3789.3	3800.0	3810.7	3821.4	3832.1	3842.8	3853.5	3864.2	3874.9	3885.6	3896.3	3907.0	3917.7	3928.4	3939.1	3949.8	3960.5	3971.2	3981.9	3992.6	4003.3	4014.0	4024.7	4035.4	4046.1	4056.8	4067.5	4078.2	4088.9	4099.6	4110.3	4121.0	4131.7	4142.4	4153.1	4163.8	4174.5	4185.2	4195.9	4206.6	4217.3	4228.0	4238.7	4249.4	4260.1	4270.8	4281.5	4292.2	4302.9	4313.6	4324.3	4335.0	4345.7	4356.4	4367.1	4377.8	4388.5	4399.2	4409.9	4420.6	4431.3	4442.0	4452.7	4463.4	4474.1	4484.8	4495.5	4506.2	4516.9	4527.6	4538.3	4549.0	4559.7	4570.4	4581.1	4591.8	4602.5	4613.2	4623.9	4634.6	4645.3	4656.0	4666.7	4677.4	4688.1	4698.8	4709.5	4720.2	4730.9	4741.6	4752.3	4763.0	4773.7	4784.4	4795.1	4805.8	4816.5	4827.2	4837.9	4848.6	4859.3	4870.0	4880.7	4891.4	4902.1	4912.8	4923.5	4934.2	4944.9	4955.6	4966.3	4977.0	4987.7	4998.4	5009.1	5019.8	5030.5	5041.2	5051.9	5062.6	5073.3	5084.0	5094.7	5105.4	5116.1	5126.8	5137.5	5148.2	5158.9	5169.6	5180.3	5191.0	5201.7	5212.4	5223.1	5233.8	5244.5	5255.2	5265.9	5276.6	5287.3	5298.0	5308.7	5319.4	5330.1	5340.8	5351.5	5362.2	5372.9	5383.6	5394.3	5405.0	5415.7	5426.4	5437.1	5447.8	5458.5	5469.2	5479.9	5490.6	5501.3	5512.0	5522.7	5533.4	5544.1	5554.8	5565.5	5576.2	5586.9	5597.6	5608.3	5619.0	5629.7	5640.4	5651.1	5661.8	5672.5	5683.2	5693.9	5704.6	5715.3	5726.0	5736.7	5747.4	5758.1	5768.8	5779.5	5790.2	5800.9	5811.6	5822.3	5833.0	5843.7	5854.4	5865.1	5875.8	5886.5	5897.2	5907.9	5918.6	5929.3	5940.0	5950.7	5961.4	5972.1	5982.8	5993.5	6004.2	6014.9	6025.6	6036.3	6047.0	6057.7	6068.4	6079.1	6089.8	6100.5	6111.2	6121.9	6132.6	6143.3	6154.0	6164.7	6175.4	6186.1	6196.8	6207.5	6218.2	6228.9	6239.6	6250.3	6261.0	6271.7	6282.4	6293.1	6303.8	6314.5	6325.2	6335.9	6346.6	6357.3	6368.0	6378.7	6389.4	6400.1	6410.8	6421.5	6432.2	6442.9	6453.6	6464.3	6475.0	6485.7	6496.4	6507.1	6517.8	6528.5	6539.2	6549.9	6560.6	6571.3	6582.0	6592.7	6603.4	6614.1	6624.8	6635.5	6646.2	6656.9	6667.6	6678.3	6689.0	6699.7	6710.4	6721.1	6731.8	6742.5	6753.2	6763.9	6774.6	6785.3	6796.0	6806.7	6817.4	6828.1	6838.8	6849.5	6860.2	6870.9	6881.6	6892.3	6903.0	6913.7	6924.4	6935.1	6945.8	6956.5	6967.2	6977.9	6988.6	6999.3	7010.0	7020.7	7031.4	7042.1	7052.8	7063.5	7074.2	7084.9	7095.6	7106.3	7117.0	7127.7	7138.4	7149.1	7159.8	7170.5	7181.2	7191.9	7202.6	7213.3	7224.0	7234.7	7245.4	7256.1	7266.8	7277.5	7288.2	7298.9	7309.6	7320.3	7331.0	7341.7	7352.4	7363.1	7373.8	7384.5	7395.2	7405.9	7416.6	7427.3	7438.0	7448.7	7459.4	7470.1	7480.8	7491.5	7502.2	7512.9	7523.6	7534.3	7545.0	7555.7	7566.4	7577.1	7587.8	7598.5	7609.2	7619.9	7630.6	7641.3	7652.0	7662.7	7673.4	7684.1	7694.8	7705.5	7716.2	7726.9	7737.6	7748.3	7759.0	7769.7	7780.4	7791.1	7801.8	7812.5	7823.2	7833.9	7844.6	7855.3	7866.0	7876.7	7887.4	7898.1	7908.8	7919.5	7930.2	7940.9	7951.6	7962.3	7973.0	7983.7	7994.4	8005.1	8015.8	8026.5	8037.2	8047.9	8058.6	8069.3	8080.0	8090.7	8101.4	8112.1	8122.8	8133.5	8144.2	8154.9	8165.6	8176.3	8187.0	8197.7	8208.4	8219.1	8229.8	8240.5	8251.2	8261.9	8272.6	8283.3	8294.0	8304.7	8315.4	8326.1	8336.8	8347.5	8358.2	8368.9	8379.6	8390.3	8401.0	8411.7	8422.4	8433.1	8443.8	8454.5	8465.2	8475.9	8486.6	8497.3	8508.0	8518.7	8529.4	8540.1	8550.8	8561.5	8572.2	8582.9	8593.6	8604.3	8615.0	8625.7	8636.4	8647.1	8657.8	8668.5	8679.2	8689.9	8700.6	8711.3	8722.0	8732.7	8743.4	8754.1	8764.8	8775.5	8786.2	8796.9	8807.6	8818.3	8829.0	8839.7	8850.4	8861.1	8871.8	8882.5	8893.2	8903.9	8914.6	8925.3	8936.0	8946.7	8957.4	8968.1	8978.8	8989.5	9000.2	9010.9	9021.6	9032.3	9043.0	9053.7	9064.4	9075.1	9085.8	9096.5	9107.2	9117.9	9128.6	9139.3	9150.0	9160.7	9171.4	9182.1	9192.8	9203.5	9214.2	9224.9	9235.6	9246.3	9257.0	9267.7	9278.4	9289.1	9300.8	9311.5	9322.2	9332.9	9343.6	9354.3	9365.0	9375.7	9386.4	9397.1	9407.8	9418.5	9429.2	9439.9	9450.6	9461.3	9472.0	9482.7	9493.4	9504.1	9514.8	9525.5	9536.2	9546.9	9557.6	9568.3	9579.0	9589.7	9600.4	9611.1	9621.8	9632.5	9643.2	9653.9	9664.6	9675.3	9686.0	9696.7	9707.4	9718.1	9728.8	9739.5	9750.2	9760.9	9771.6	9782.3	9793.0	9803.7	9814.4	9825.1	9835.8	9846.5	9857.2	9867.9	9878.6	9889.3	9900.0	9910.7	9921.4	9932.1	9942.8	9953.5	9964.2	9974.9	9985.6	9996.3	10007.0	10017.7	10028.4	10039.1	10049.8	10060.5	10071.2	10081.9	10092.6	10103.3	10114.0	10124.7	10135.4	10146.1	10156.8	10167.5	10178.2	10188.9	10199.6	10210.3	10221.0	10231.7	10242.4	10253.1	10263.8	10274.5	10285.2	10295.9	10306.6	10317.3	10328.0	10338.7	10349.4	10360.1	10370.8	10381.5	10392.2	10402.9	10413.6	10424.3	10435.0	10445.7	10456.4	10467.1	10477.8	10488.5	10499.2	10510.9	10521.6	10532.3	10543.0	10553.7	10564.4	10575.1	10585.8	10596.5	10607.2	10

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-23839
 * SCAN # 3 FRAME # 3361 ANGLE 9.523 TO FRAME # 4002 ANGLE 64.694 CRITICAL AMP AT CELL 34
 OPTION # 12

MAXIMUM I - 72.0
 AVERAGE I - 1.8

ANGLE
 1 9.7
 2 10.0
 3 10.6
 4 11.5
 5 12.7
 6 14.1
 7 15.5
 8 17.1
 9 18.6
 10 20.0
 11 21.6
 12 23.0
 13 24.5
 14 26.0
 15 27.5
 16 29.0
 17 30.6
 18 32.0
 19 33.5
 20 35.0
 21 36.5
 22 37.9
 23 39.5
 24 40.9
 25 42.4
 26 43.9
 27 45.3
 28 46.7
 29 48.2
 30 49.7
 31 51.0
 32 52.5
 33 54.0
 34 55.6
 35 57.1
 36 58.6
 37 60.1
 38 61.6
 39 63.1
 40 64.1
 41 64.6

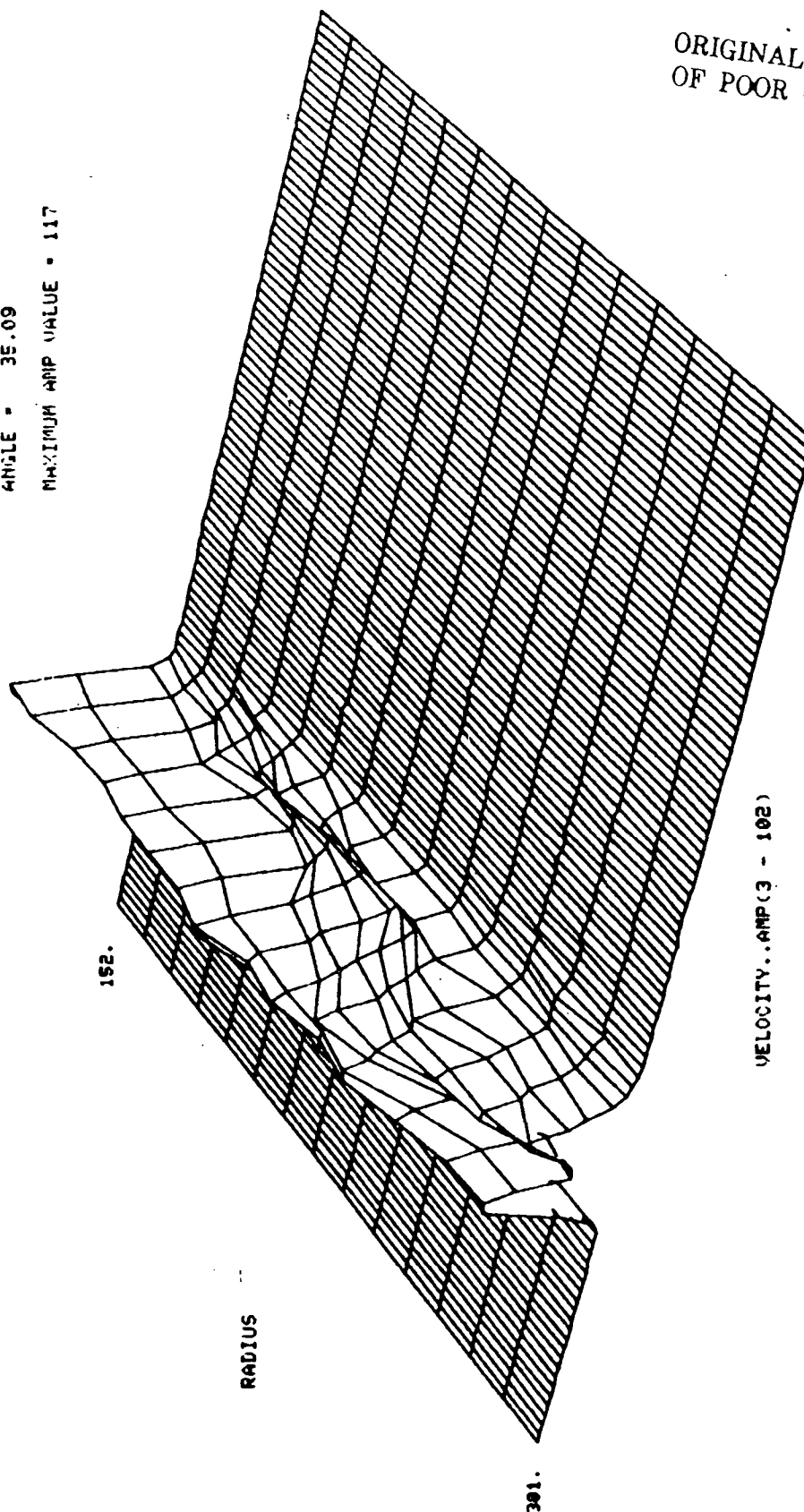
R
 1 148.0
 2 158.7
 3 169.4
 4 180.2
 5 190.9
 6 201.6
 7 212.3
 8 223.0
 9 233.7
 10 244.5
 11 255.2
 12 265.9
 13 276.6
 14 288.1



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I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 3 FRAME # 3381 ANGLE 9.528 TO FRAME # 4002 ANGLE 64.694 CRITICAL AMP AT CELL 34
 FRAME # 3672 TO 3687
 ANGLE = 35.09
 MAXIMUM AMP VALUE = 117

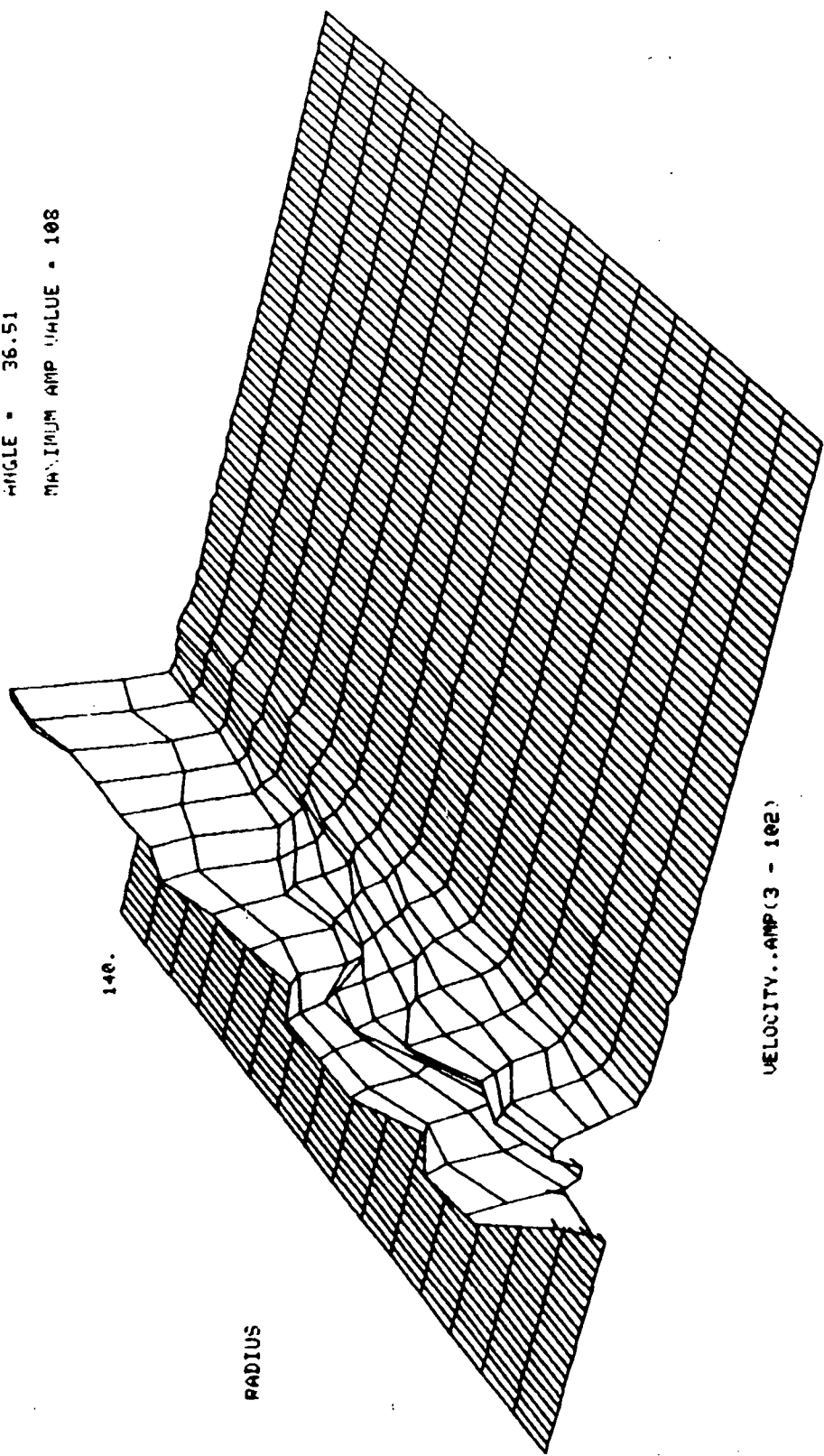


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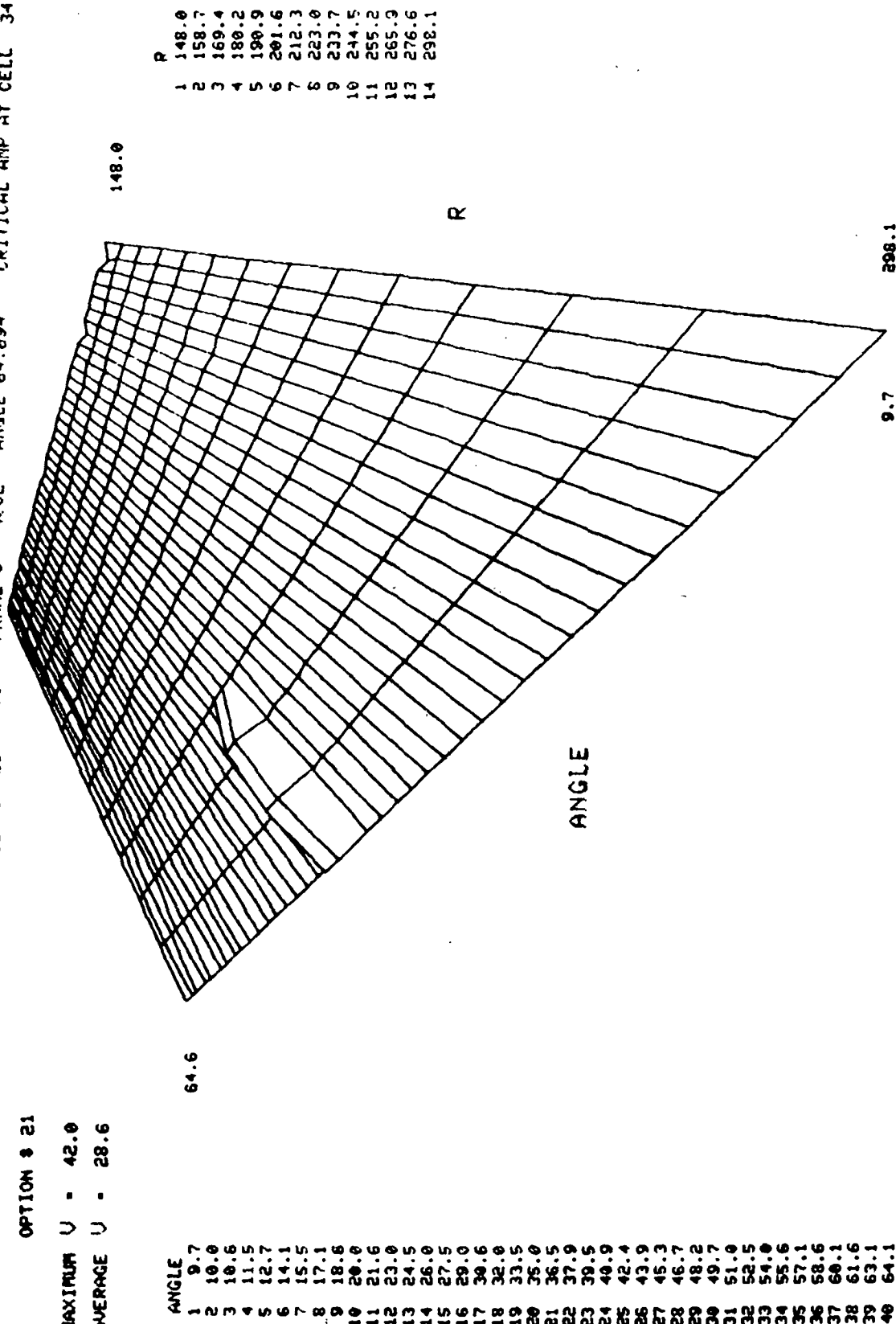
NASA PROJECT DUST DEVIL    DAY 236    RUN # 17    TAPE 1 OF 2-20339
SCAN # 3    FRAME # 3381    ANGLE 9.528    TO    FRAME # 4002    ANGLE 64.694    CRITICAL AMP AT CELL 34
FRAME # 3687    TO    3703
ANGLE = 36.51
MAXIMUM AMP VALUE = 108

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 3 FRAME # 3381 ANGLE 9.523 TO FRAME # 4002 ANGLE 64.694 CRITICAL AMP AT CELL 34
 OPTION # 21

MAXIMUM U - 42.0
 AVERAGE U - 28.6



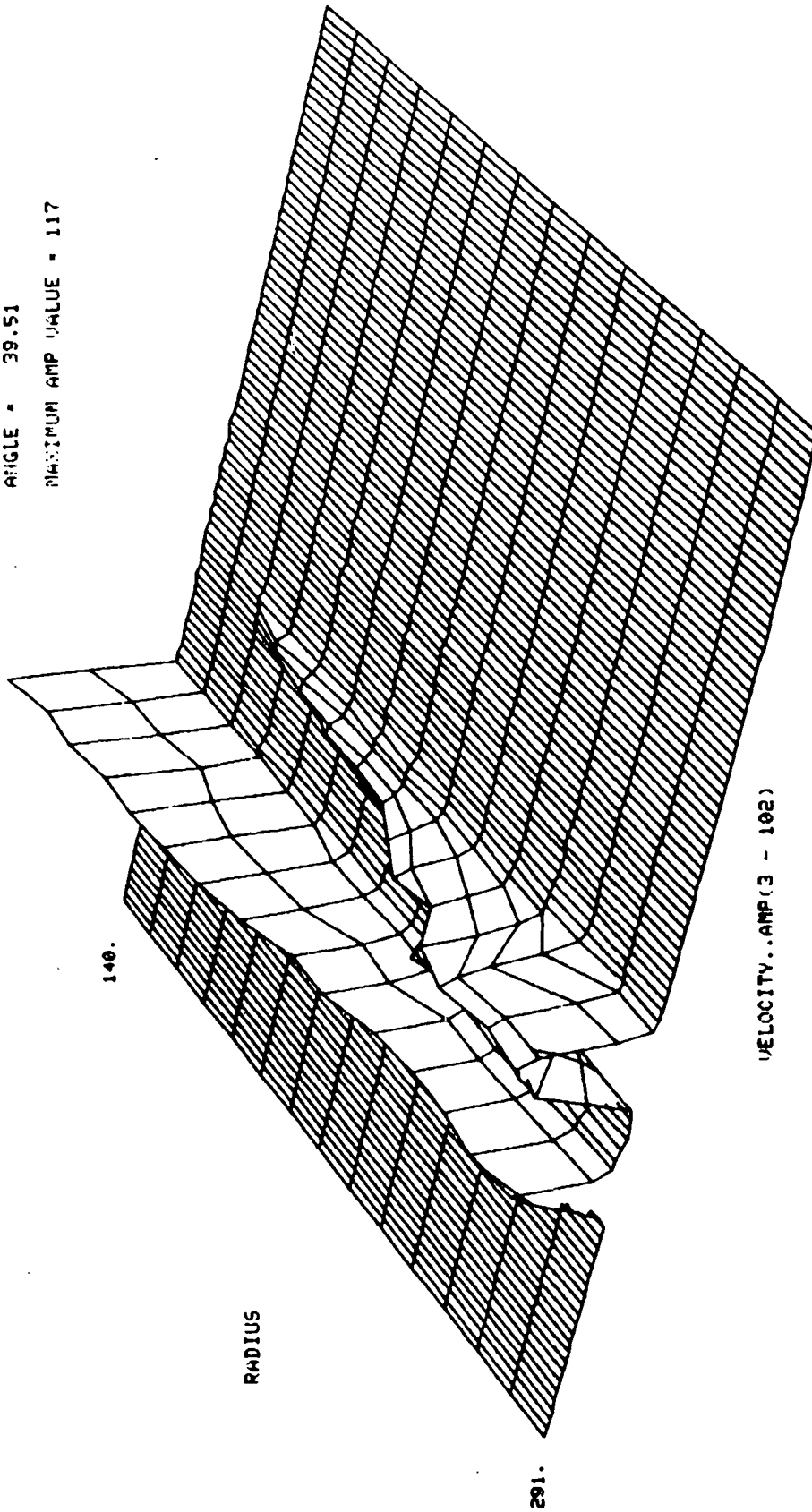
ANGLE	R
1 9.7	1 148.0
2 10.0	2 158.7
3 10.6	3 169.4
4 11.5	4 180.2
5 12.7	5 190.9
6 14.1	6 201.6
7 15.5	7 212.3
8 17.1	8 223.0
9 18.6	9 233.7
10 20.0	10 244.5
11 21.6	11 255.2
12 23.0	12 265.9
13 24.5	13 276.6
14 26.0	14 288.1
15 27.5	
16 29.0	
17 30.6	
18 32.0	
19 33.5	
20 35.0	
21 36.5	
22 37.9	
23 39.5	
24 40.9	
25 42.4	
26 43.9	
27 45.3	
28 46.7	
29 48.2	
30 49.7	
31 51.0	
32 52.5	
33 54.0	
34 55.6	
35 57.1	
36 58.6	
37 60.1	
38 61.6	
39 63.1	
40 64.1	
41 64.6	

U, R, A DISPLAY (VELOCITY AT I_{max})

68803-70134



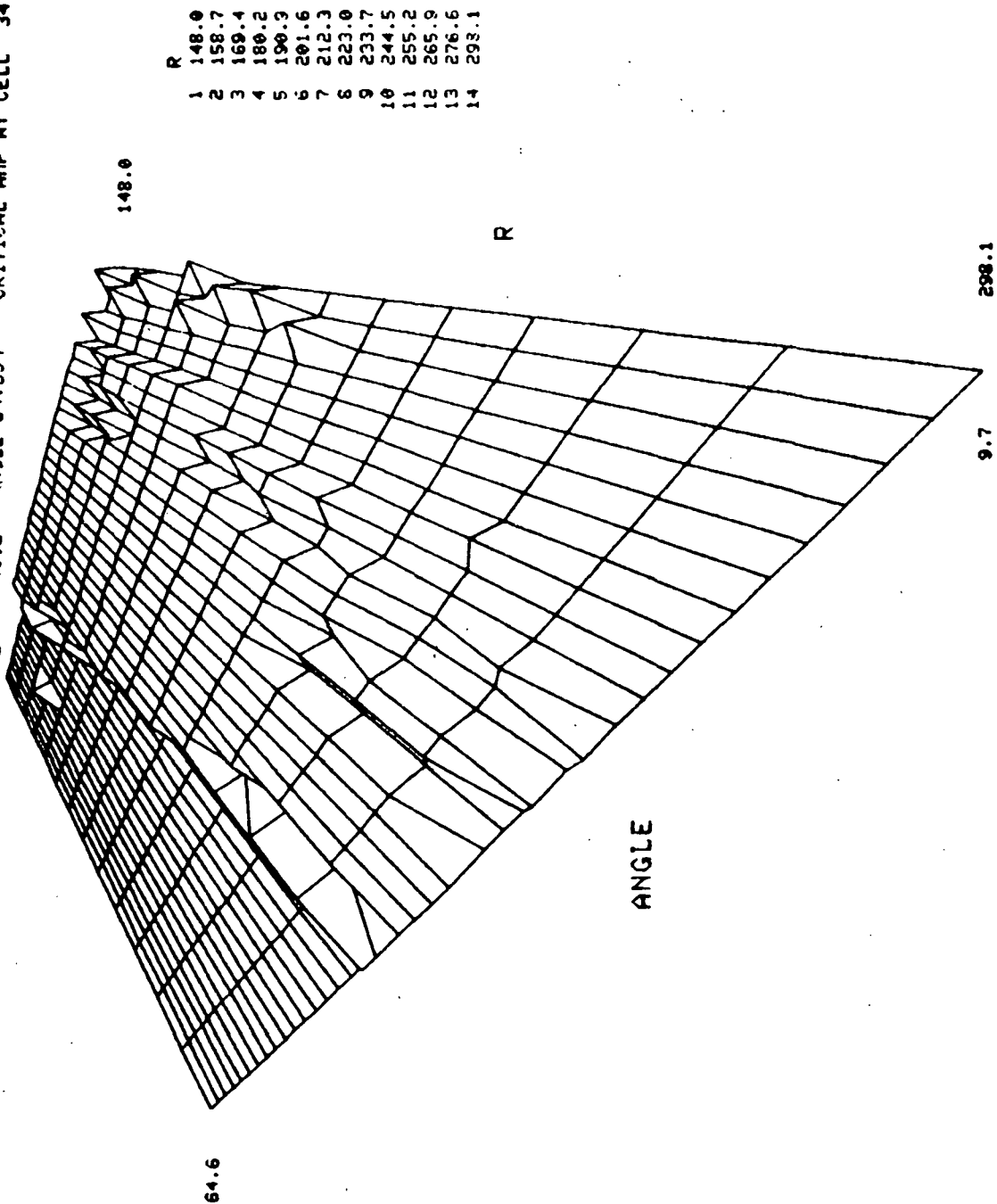
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20383
 SCAN # 3 FRAME # 3381 ANGLE 9.528 TO FRAME # 4002 ANGLE 64.634 CRITICAL AMP AT CELL 34
 FRAME # 3719 TO 3734
 ANGLE = 39.51
 MAXIMUM AMP VALUE = 117



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 3 FRAME # 3381 ANGLE 9.528 TO FRAME # 4002 ANGLE 64.694 CRITICAL AMP AT CELL 34
 OPTION # 22

MAXIMUM U - 43.0
 AVERAGE U - 12.8

ANGLE
1 9.7
2 10.0
3 10.6
4 11.5
5 12.7
6 14.1
7 15.5
8 17.1
9 18.6
10 20.0
11 21.6
12 23.0
13 24.5
14 26.0
15 27.5
16 29.0
17 30.6
18 32.0
19 33.5
20 35.0
21 36.5
22 37.9
23 39.5
24 40.9
25 42.4
26 43.9
27 45.3
28 46.7
29 48.2
30 49.7
31 51.0
32 52.5
33 54.0
34 55.6
35 57.1
36 58.6
37 60.1
38 61.6
39 63.1
40 64.1
41 64.6

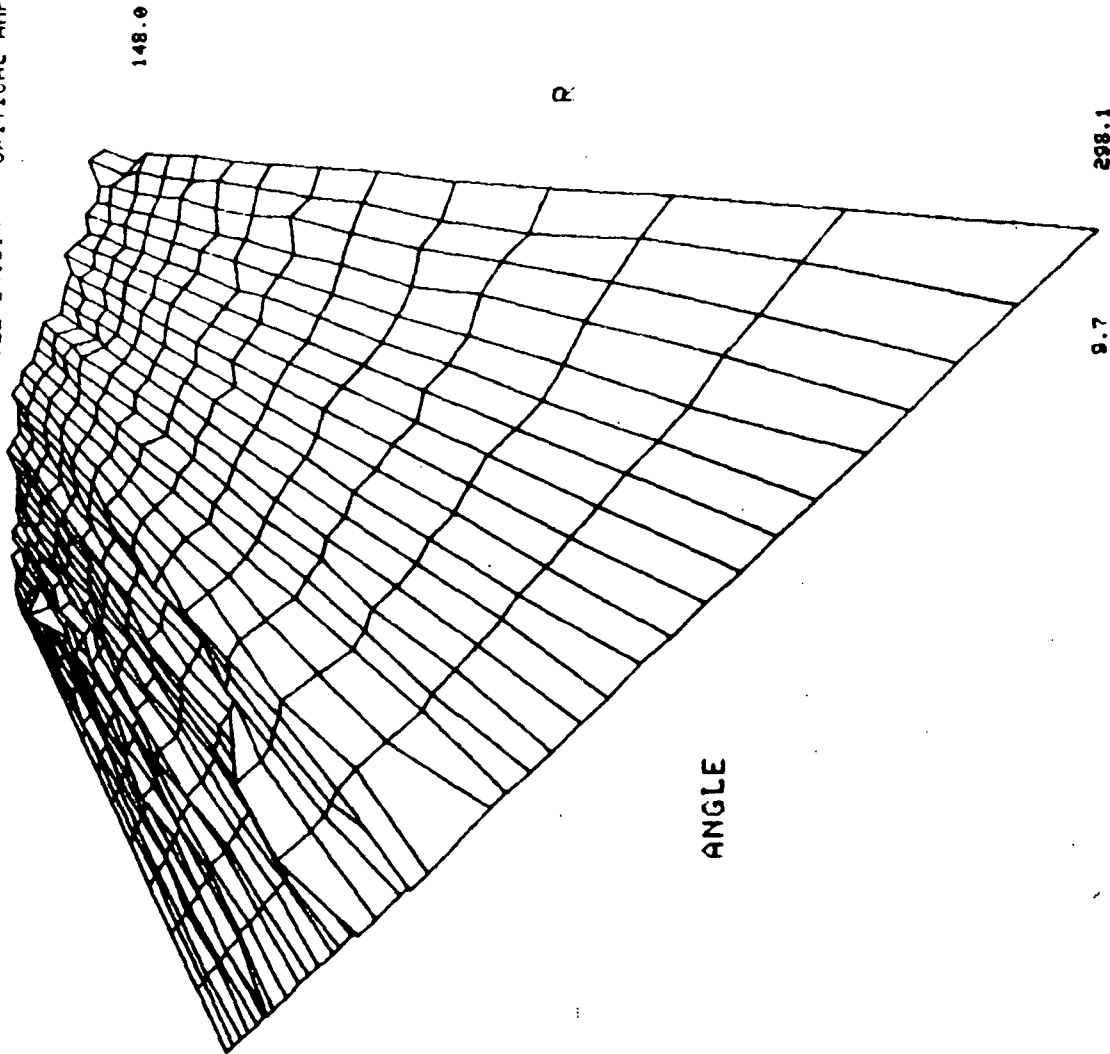


R
1 148.0
2 158.7
3 169.4
4 180.2
5 190.9
6 201.6
7 212.3
8 223.0
9 233.7
10 244.5
11 255.2
12 265.9
13 276.6
14 293.1

Umax, R, A DISPLAY AMPLITUDE THRESHOLD AT I - 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20339
 SCAN # 3 FRAME # 3381 ANGLE 9.528 TO FRAME # 4022 ANGLE 64.834 CRITICAL AMP AT CELL 34
 OPTION # 31

R
 1 148.0
 2 152.7
 3 169.4
 4 180.2
 5 190.9
 6 201.6
 7 212.3
 8 223.0
 9 233.7
 10 244.5
 11 255.2
 12 265.9
 13 276.6
 14 288.1



ANGLE
 1 9.7
 2 10.0
 3 10.6
 4 11.5
 5 12.7
 6 14.1
 7 15.5
 8 17.1
 9 18.6
 10 20.0
 11 21.6
 12 23.0
 13 24.5
 14 26.0
 15 27.5
 16 29.0
 17 30.6
 18 32.0
 19 33.5
 20 35.0
 21 36.5
 22 37.9
 23 39.5
 24 40.9
 25 42.4
 26 43.9
 27 45.3
 28 46.7
 29 48.2
 30 49.7
 31 51.0
 32 52.5
 33 54.0
 34 55.6
 35 57.1
 36 58.6
 37 60.1
 38 61.6
 39 63.1
 40 64.1
 41 64.6

U X Imax, R, A DISPLAY

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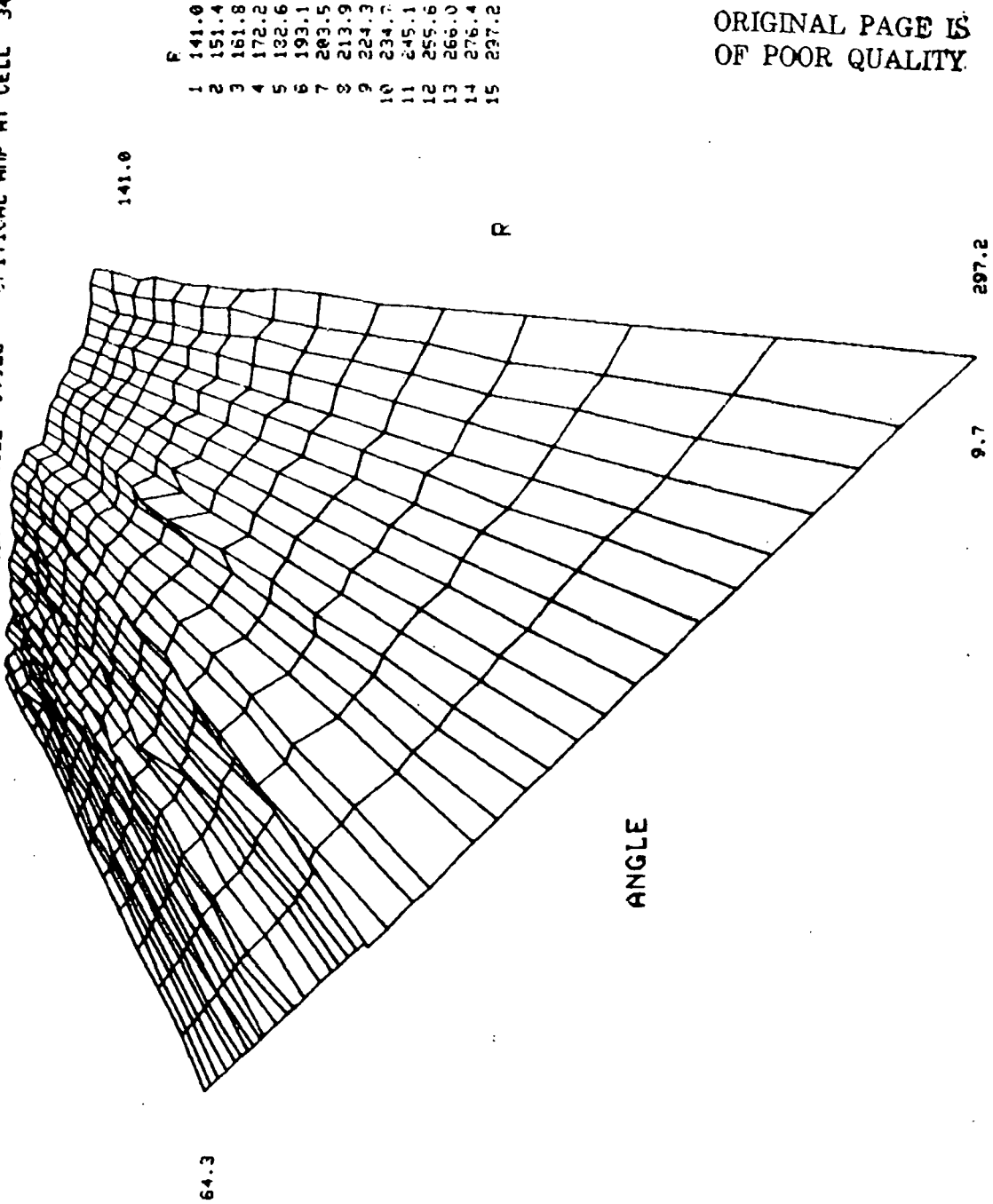
NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20283
 SCAN # 4 FRAME # 4002 ANGLE 64.694 TO FRAME # 4620 ANGLE 9.528 OPTICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 128.0

AVERAGE I - 53.6

ANGLE
1 64.3
2 64.0
3 63.3
4 62.3
5 61.1
6 59.7
7 58.3
8 56.8
9 55.3
10 53.7
11 52.2
12 50.8
13 49.3
14 47.8
15 46.4
16 44.9
17 43.5
18 42.0
19 40.5
20 39.0
21 37.6
22 36.1
23 34.6
24 33.1
25 31.6
26 30.1
27 28.6
28 27.2
29 25.6
30 24.1
31 22.6
32 21.1
33 19.6
34 18.0
35 16.5
36 14.9
37 13.5
38 12.0
39 10.5
40 9.7



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 OF POOR QUALITY

Imax, R, A DISPLAY

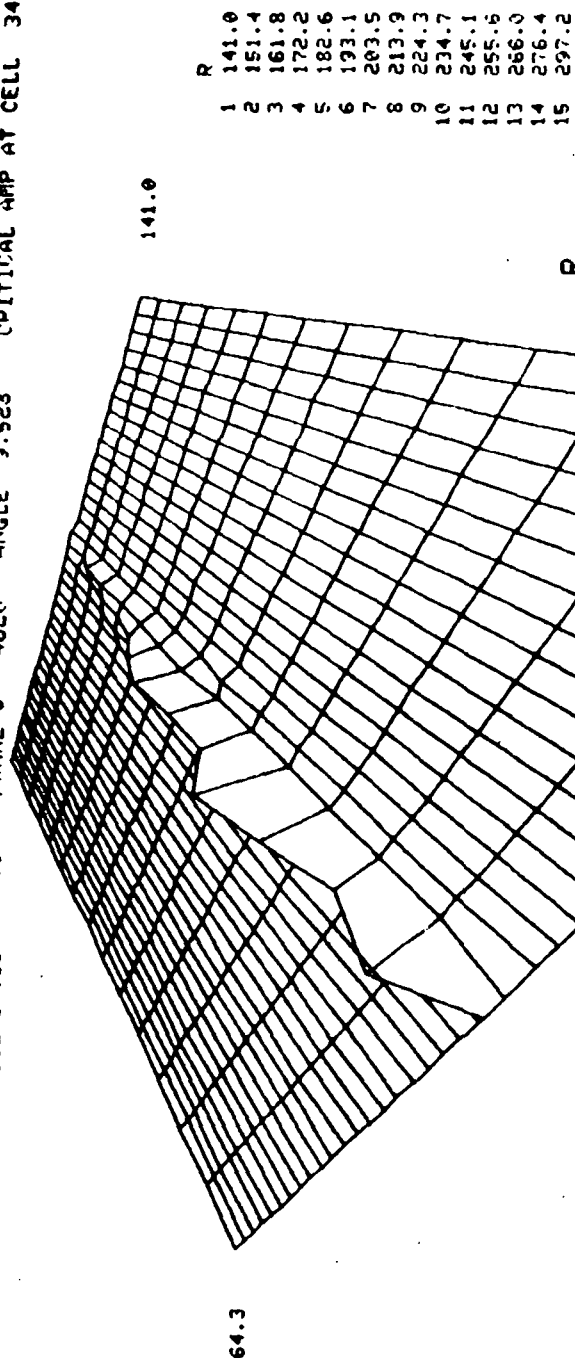
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20339
 * SCAN # 4 FRAME # 4002 ANGLE 64.634 TO FRAME # 4620 ANGLE 9.523 OPTICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 60.0

AVERAGE I - 1.1

ANGLE	
1 64.3	
2 64.0	
3 63.3	
4 62.3	
5 61.1	
6 59.7	
7 58.3	
8 56.8	
9 55.3	
10 53.7	
11 52.2	
12 50.8	
13 49.3	
14 47.8	
15 46.4	
16 44.9	
17 43.5	
18 42.0	
19 40.5	
20 39.0	
21 37.6	
22 36.1	
23 34.6	
24 33.1	
25 31.6	
26 30.1	
27 28.6	
28 27.2	
29 25.6	
30 24.1	
31 22.6	
32 21.1	
33 19.6	
34 18.0	
35 16.5	
36 14.9	
37 13.5	
38 12.0	
39 10.5	
40 9.7	

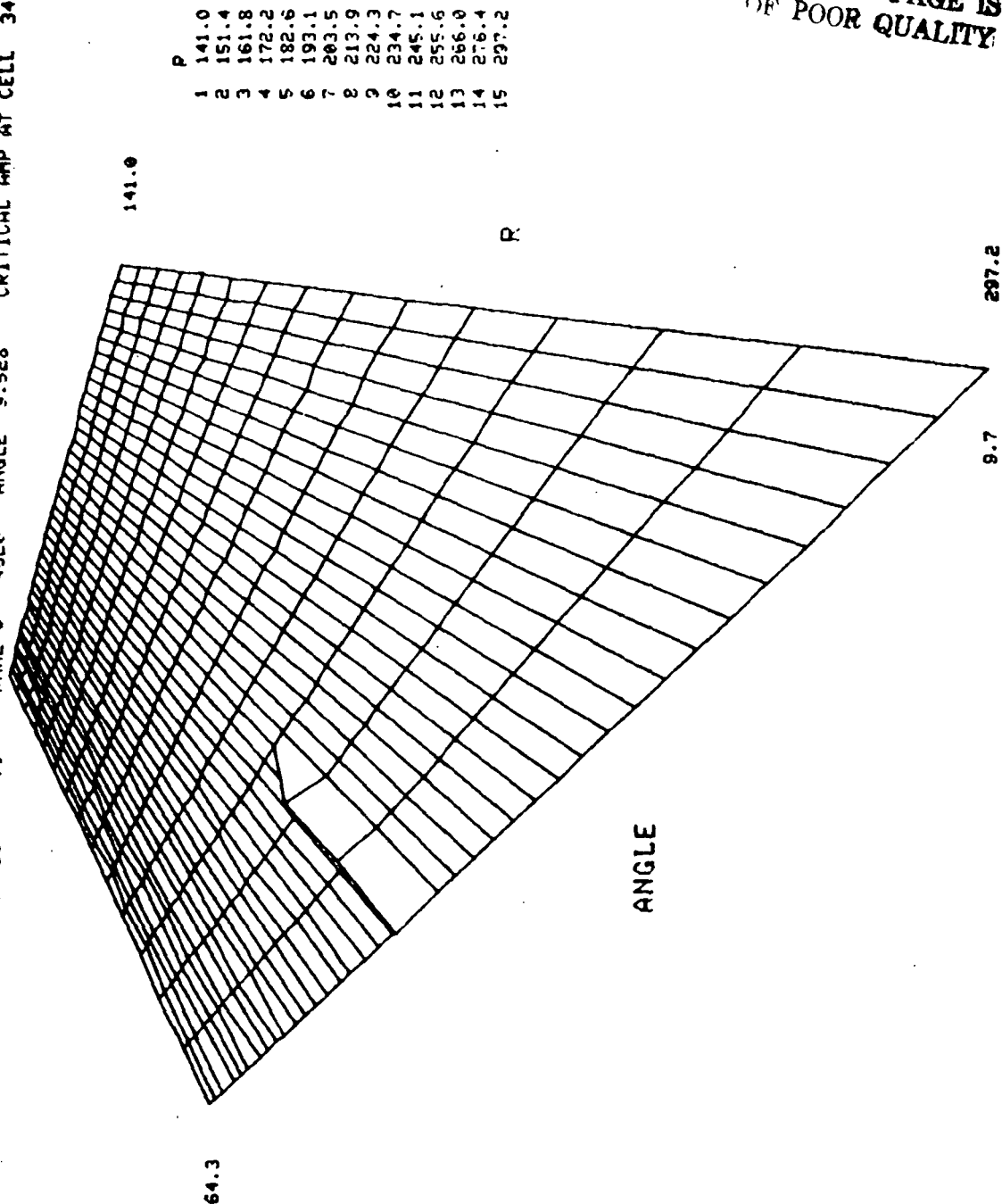


I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 4 FRAME # 4002 ANGLE 64.694 TO FRAME # 4620 ANGLE 9.523 CRITICAL AMP AT CELL 34
 OPTION # 21

MAXIMUM U - 43.0
 AVERAGE U - 28.5

ANGLE
 1 64.3
 2 64.0
 3 63.3
 4 62.3
 5 61.1
 6 59.7
 7 58.3
 8 56.8
 9 55.3
 10 53.7
 11 52.2
 12 50.8
 13 49.3
 14 47.8
 15 46.4
 16 44.9
 17 43.5
 18 42.0
 19 40.5
 20 39.0
 21 37.6
 22 36.1
 23 34.6
 24 33.1
 25 31.6
 26 30.1
 27 28.6
 28 27.2
 29 25.6
 30 24.1
 31 22.6
 32 21.1
 33 19.6
 34 18.0
 35 16.5
 36 14.9
 37 13.5
 38 12.0
 39 10.5
 40 9.7

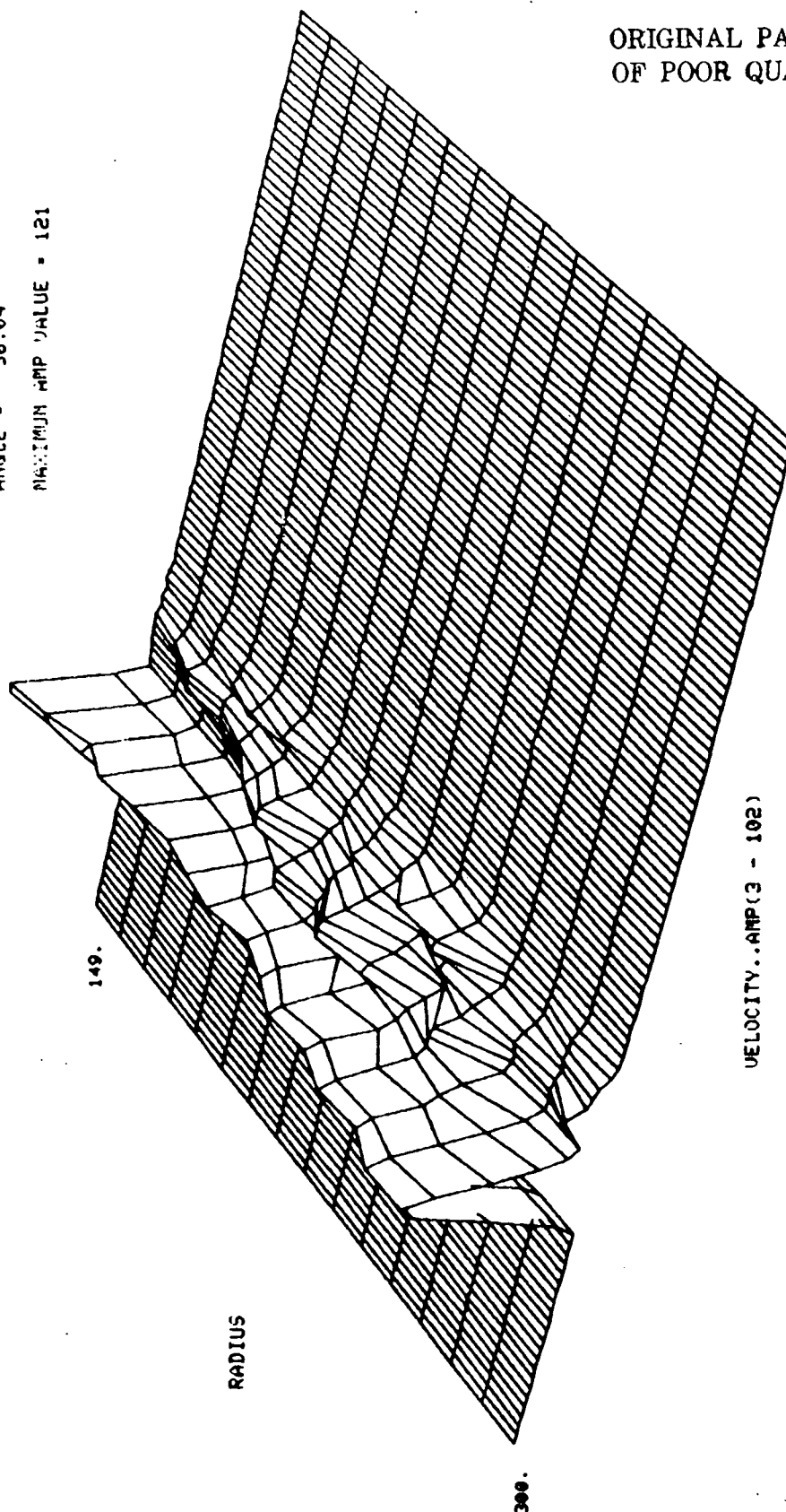


P
 1 141.0
 2 151.4
 3 161.8
 4 172.2
 5 182.6
 6 193.1
 7 203.5
 8 213.9
 9 224.3
 10 234.7
 11 245.1
 12 255.6
 13 266.0
 14 276.4
 15 287.2

U, R, A DISPLAY (VELOCITY AT I MAX)

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 4 FRAME # 4002 ANGLE 64.624 TO FRAME # 4620 ANGLE 9.528 CRITICAL AMP AT CELL 34
 FRAME # 4329 TO 4345
 ANGLE = 36.04
 MAXIMUM AMP VALUE = 121



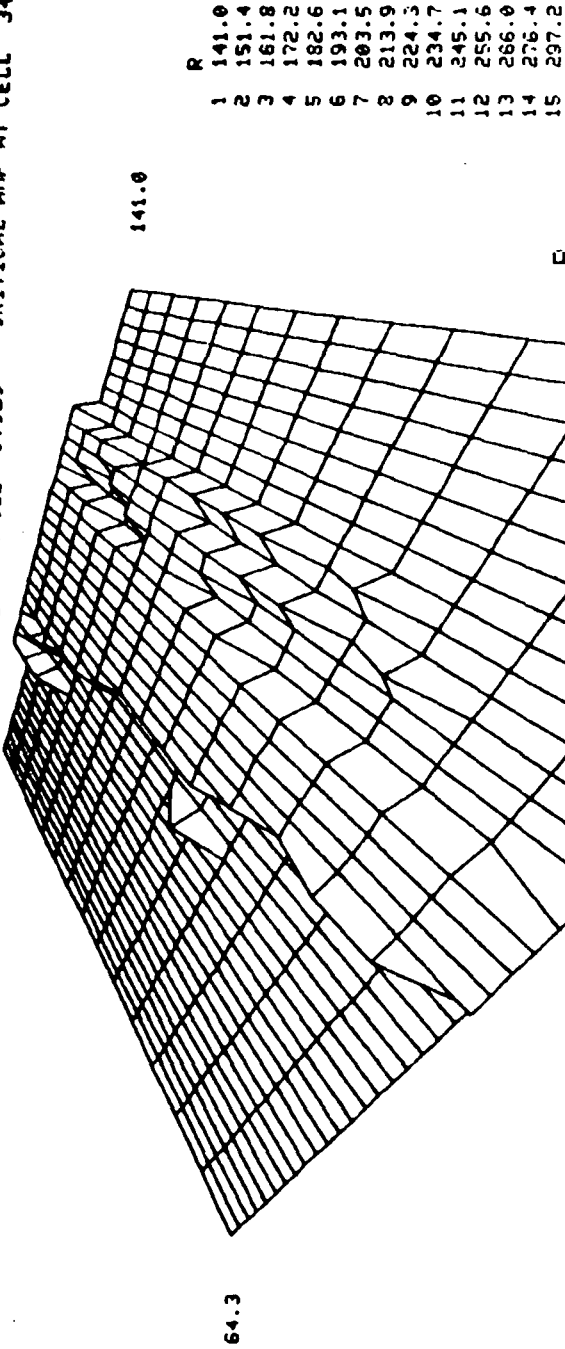
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OF POOR QUALITY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
SCAN # 4 FRAME # 4002 ANGLE 64.634 TO FRAME # 4620 ANGLE 9.528 CRITICAL AMP AT CELL 34

OPTION # 22

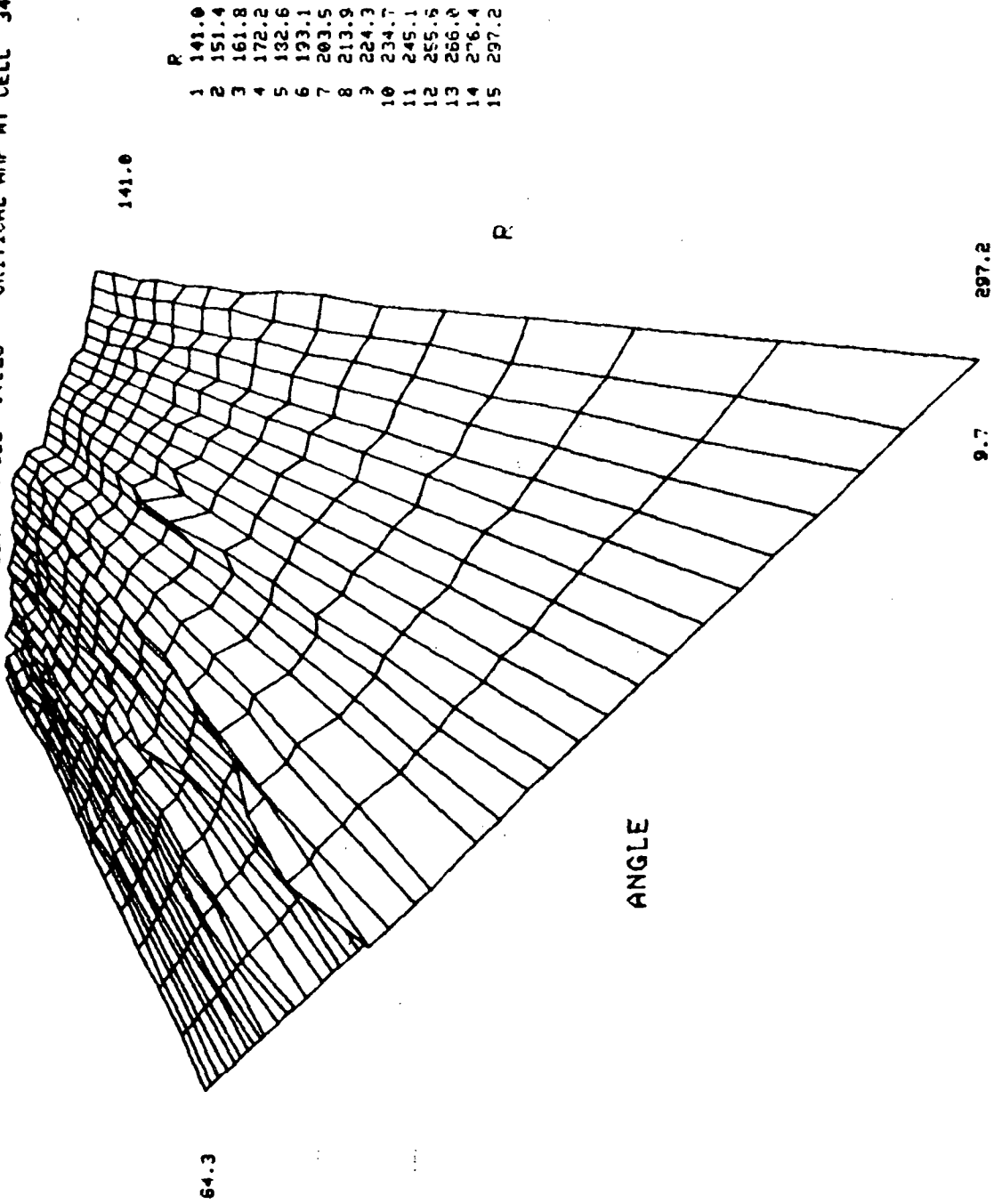
MAXIMUM U - 43.0
AVERAGE U - 8.6

ANGLE
1 64.3
2 64.0
3 63.3
4 62.3
5 61.1
6 59.7
7 58.3
8 56.8
9 55.3
10 53.7
11 52.2
12 50.8
13 49.3
14 47.8
15 46.4
16 44.9
17 43.5
18 42.0
19 40.5
20 39.0
21 37.6
22 36.1
23 34.6
24 33.1
25 31.6
26 30.1
27 28.6
28 27.2
29 25.6
30 24.1
31 22.6
32 21.1
33 19.6
34 18.0
35 16.5
36 14.9
37 13.5
38 12.0
39 10.5
40 9.7



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I - 70

NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 4 FRAME # 4002 ANGLE 64.694 TO FRAME # 4620 ANGLE 9.528 CRITICAL AMP AT CELL 34
 OPTION # 31



R
 1 141.0
 2 151.4
 3 161.8
 4 172.2
 5 182.6
 6 193.1
 7 203.5
 8 213.9
 9 224.3
 10 234.7
 11 245.1
 12 255.5
 13 266.0
 14 276.4
 15 287.2

ANGLE
 1 64.3
 2 64.0
 3 63.3
 4 62.3
 5 61.1
 6 59.7
 7 58.3
 8 56.8
 9 55.3
 10 53.7
 11 52.2
 12 50.8
 13 49.3
 14 47.8
 15 46.4
 16 44.9
 17 43.5
 18 42.0
 19 40.5
 20 39.0
 21 37.6
 22 36.1
 23 34.6
 24 33.1
 25 31.6
 26 30.1
 27 28.6
 28 27.2
 29 25.6
 30 24.1
 31 22.6
 32 21.1
 33 19.6
 34 18.0
 35 16.5
 36 14.9
 37 13.5
 38 12.0
 39 10.5
 40 9.7

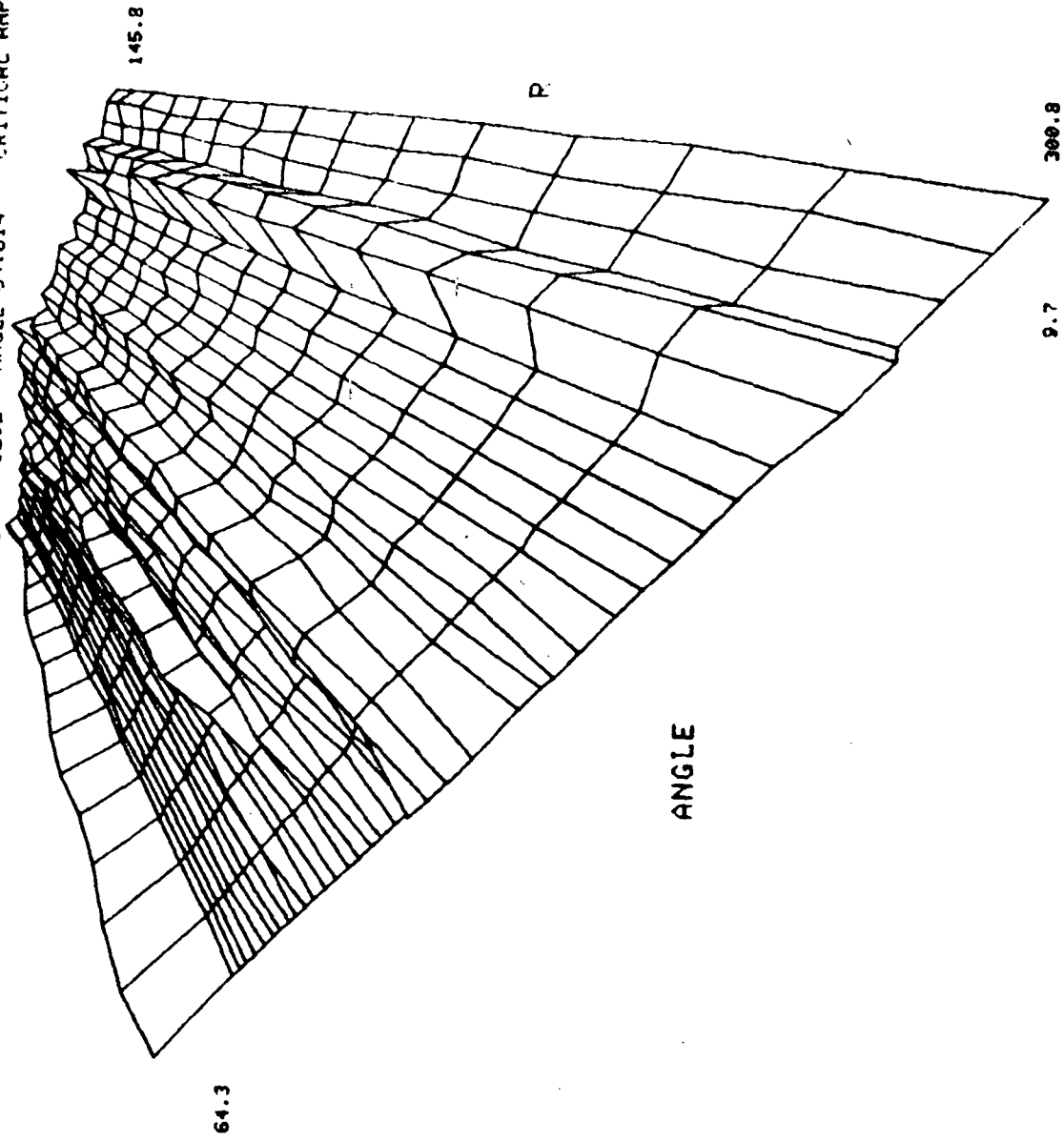
U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 THPE 1 OF 2-20829
 SCAN # 5 FRAME # 4620 ANGLE 9.523 TO FRAME # 5252 ANGLE 54.614 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 126.0
 AVERAGE I - 46.1

- | R | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 145.8 | 156.1 | 166.4 | 176.8 | 187.1 | 197.4 | 207.2 | 218.1 | 228.4 | 238.8 | 249.1 | 259.5 | 269.8 | 280.1 | 300.2 |



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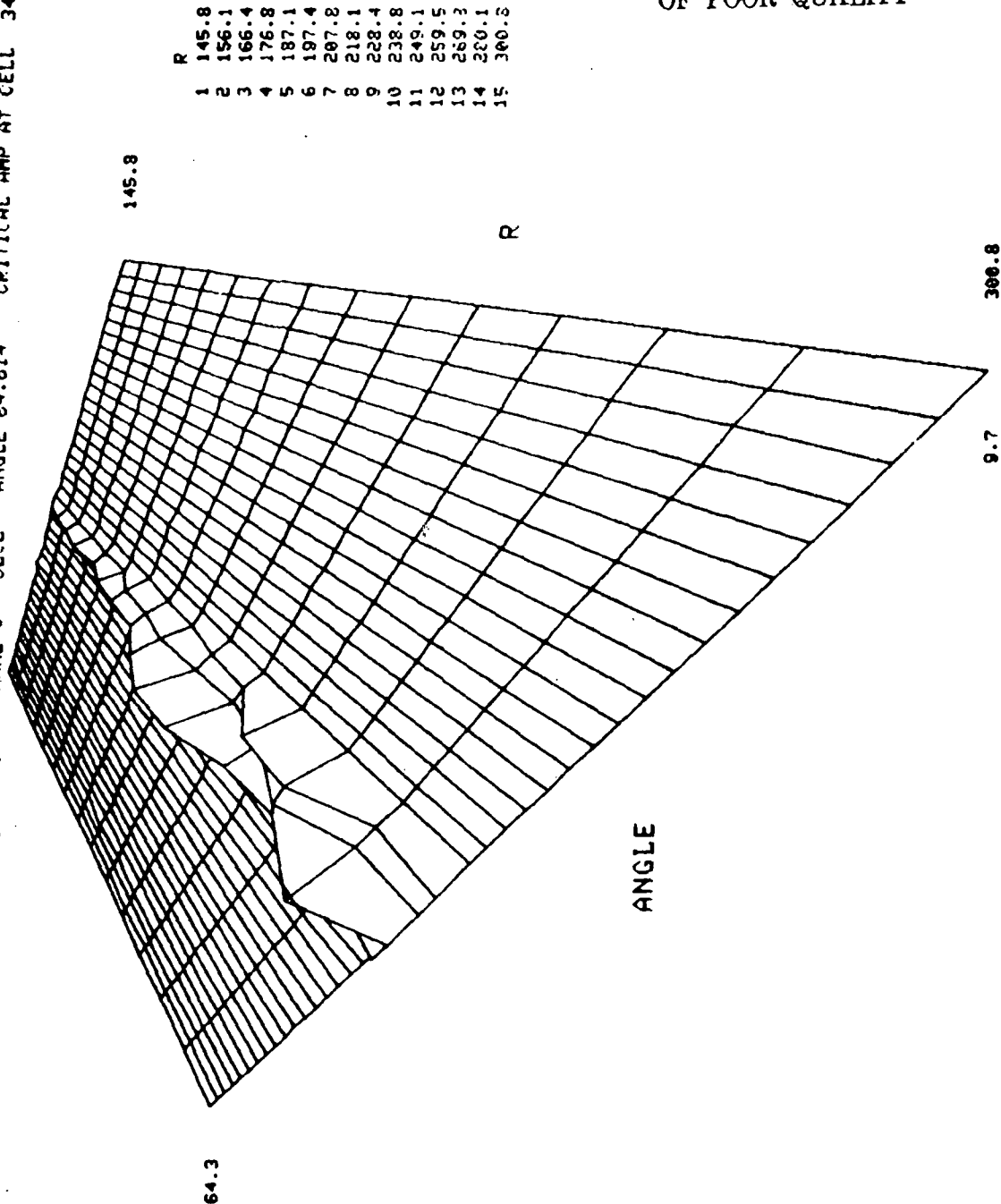
- | ANGLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
|-------|-----|-----|------|
| | 9.7 | 9.8 | 10.3 | 11.1 | 12.1 | 13.5 | 14.8 | 16.3 | 17.9 | 19.4 | 20.9 | 22.3 | 23.8 | 25.4 | 26.8 | 28.4 | 29.8 | 31.3 | 32.9 | 34.3 | 35.8 | 37.3 | 38.7 | 40.2 | 41.7 | 43.2 | 44.5 | 46.1 | 47.5 | 48.9 | 50.5 | 52.0 | 53.4 | 54.9 | 56.5 | 57.9 | 59.5 | 60.9 | 62.4 | 63.7 | 64.3 |

I_{max}, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20829
 SCAN # 5 FRAME # 4620 ANGLE 9.528 TO FRAME # 5252 ANGLE 64.614 CRITICAL AMP AT CELL 34
 OPTION # 12

MAXIMUM I - 38.0
 AVERAGE I - 1.1

ANGLE
1 9.7
2 9.8
3 10.3
4 11.1
5 12.1
6 13.5
7 14.8
8 16.3
9 17.9
10 19.4
11 20.9
12 22.3
13 23.8
14 25.4
15 26.8
16 28.4
17 29.8
18 31.3
19 32.9
20 34.3
21 35.8
22 37.3
23 38.7
24 40.2
25 41.7
26 43.2
27 44.5
28 46.1
29 47.5
30 49.0
31 50.5
32 52.0
33 53.4
34 54.9
35 56.5
36 57.9
37 59.5
38 60.9
39 62.4
40 63.7
41 64.3

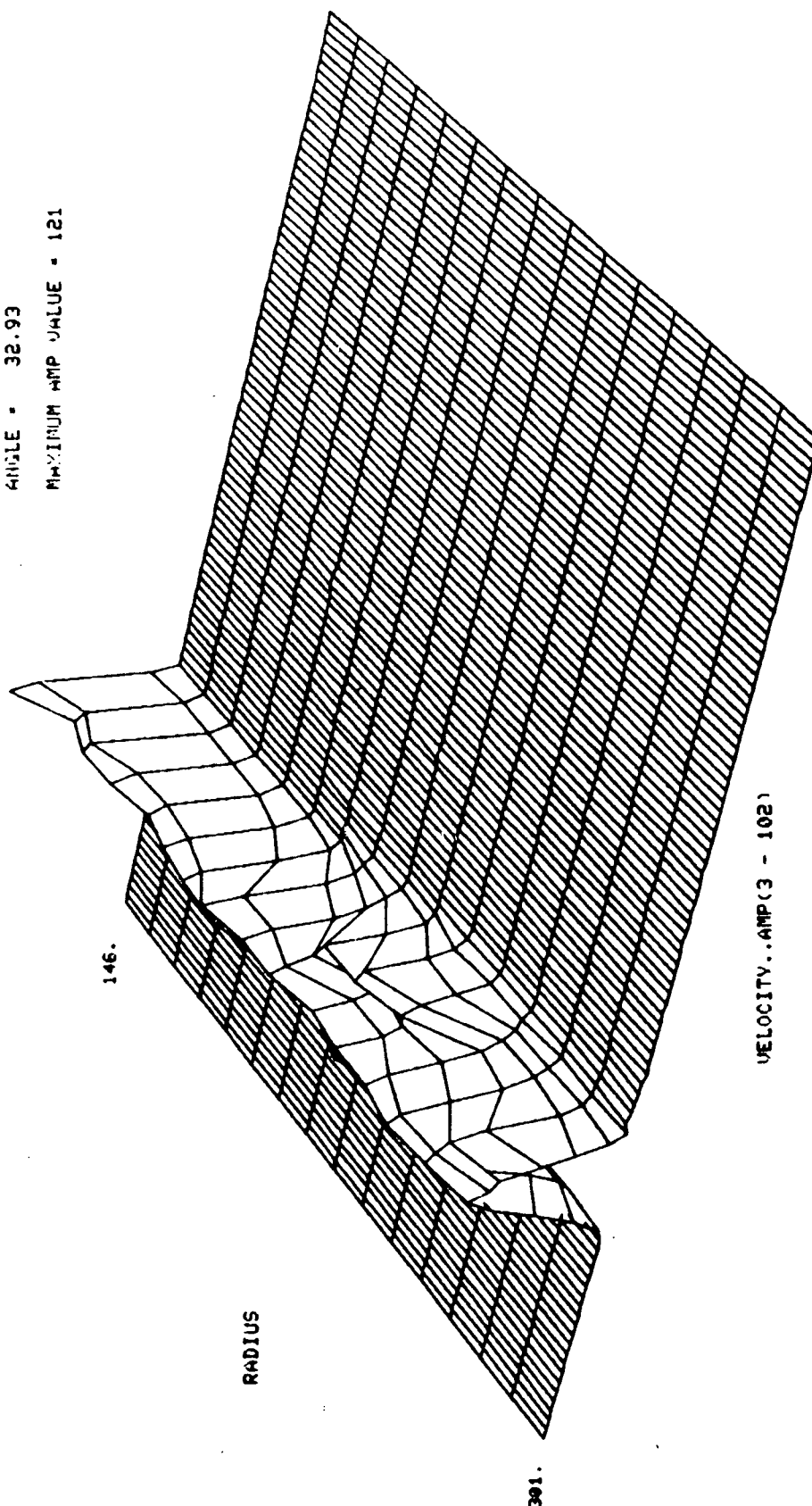


R
1 145.8
2 156.1
3 166.4
4 176.8
5 187.1
6 197.4
7 207.8
8 218.1
9 228.4
10 238.8
11 249.1
12 259.5
13 269.3
14 280.1
15 300.3

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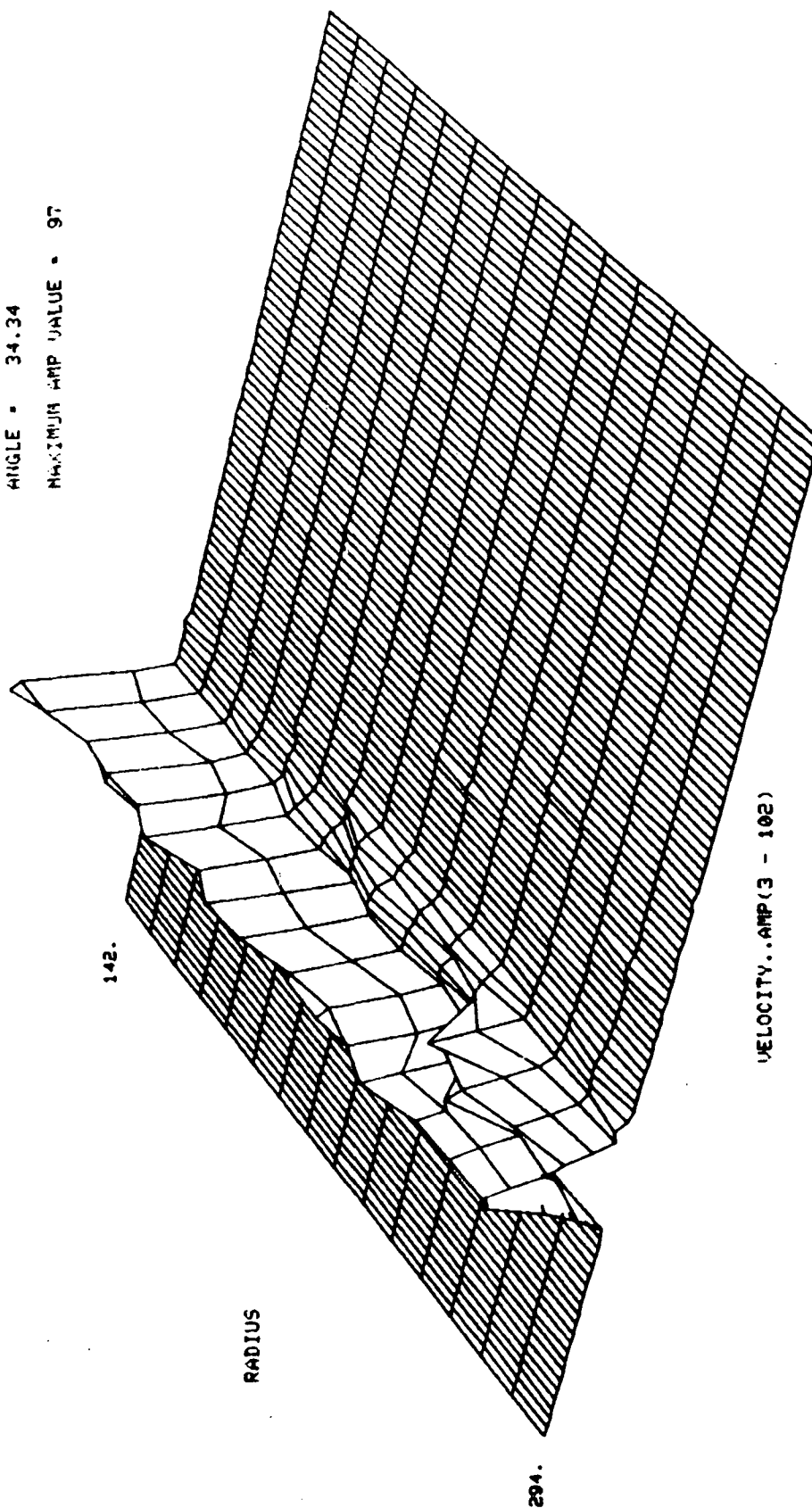
I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
SCAN # 5 FRAME # 4620 ANGLE 9.528 TO FRAME # 5352 ANGLE 64.614 CRITICAL AMP AT CELL 34
FRAME # 4892 TO 4908
ANGLE = 32.93
MAXIMUM AMP VALUE = 121

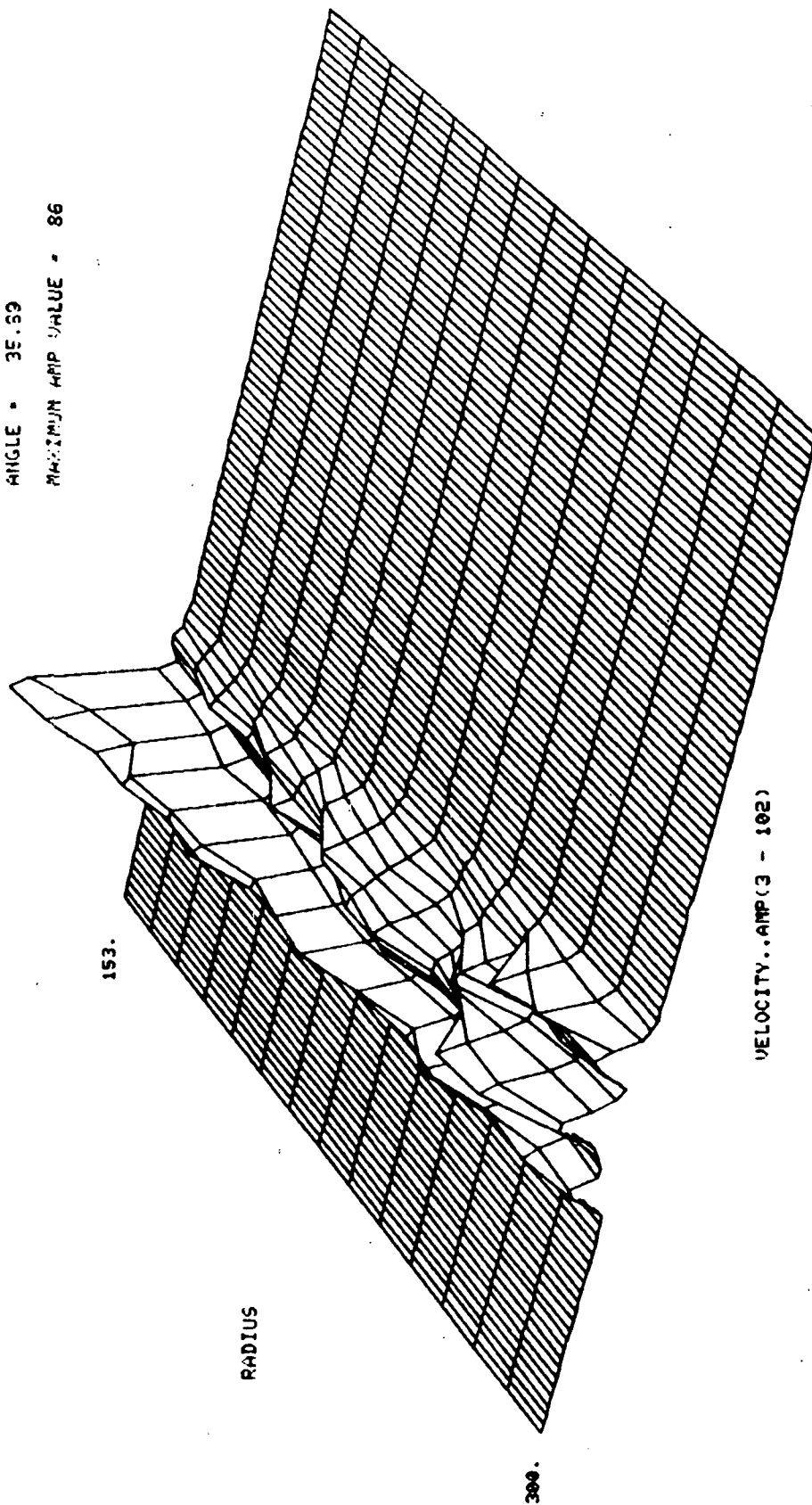


NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839

SCAN # 5	FRAME # 4620	ANGLE 9.526	TO	FRAME # 5252	ANGLE 64.614	CRITICAL AMP AT CELL 34
				FRAME # 4908	TO 4924	
				ANGLE =	34.34	
						MAXIMUM AMP VALUE = 97



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
SCAN # 5 FRAME # 4620 ANGLE 9.526 TO FRAME # 5252 ANGLE 54.614 CRITICAL AMP AT CELL 34
FRAME # 4924 TO 4939
ANGLE = 35.39
MAXIMUM AMP VALUE = 86

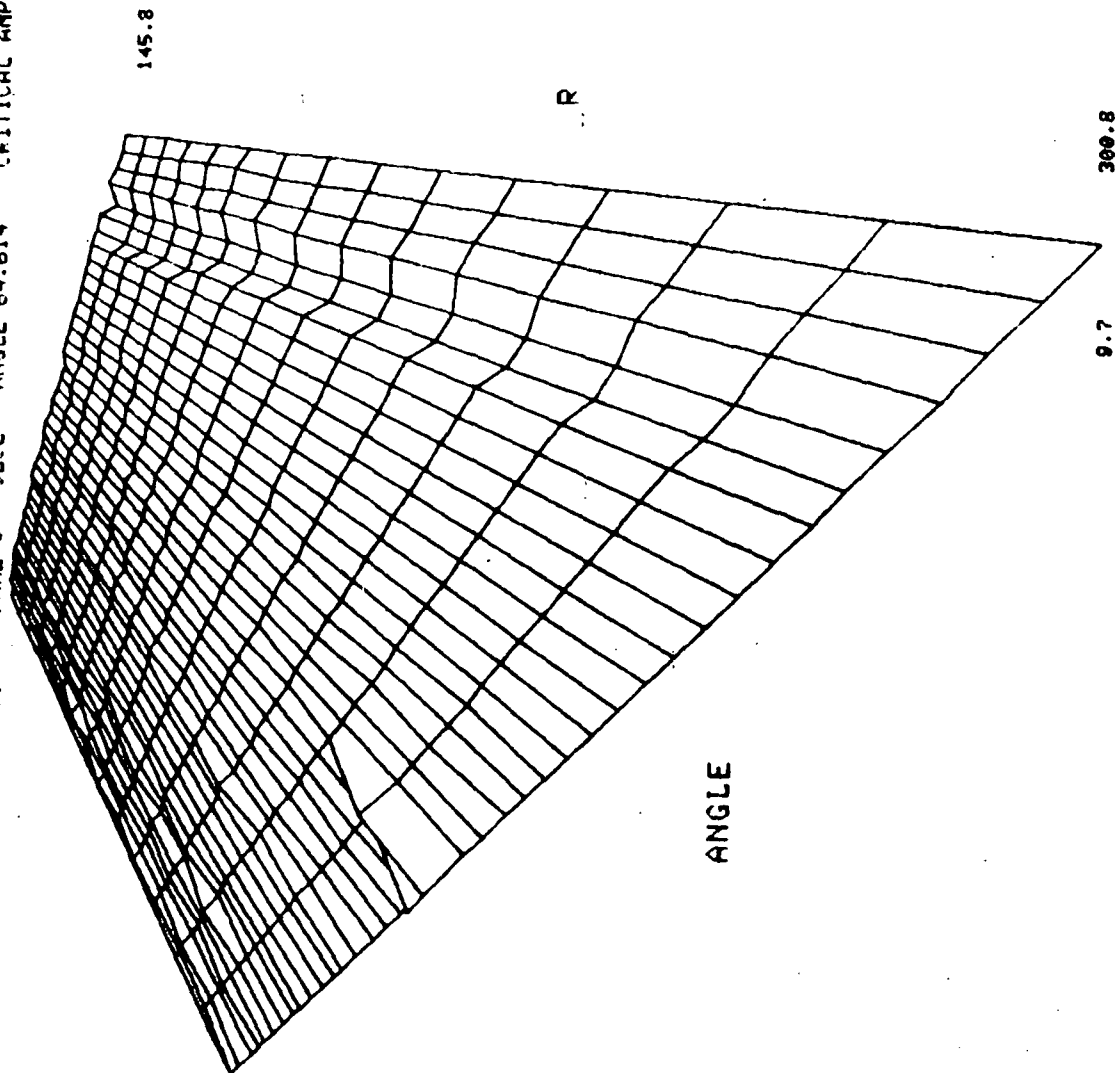


NASA PROJECT DUST DEVIL DAY 226 RUN # 17 TAPE 1 OF 2-20289
 SCAN # 5 FRAME # 4620 ANGLE 9.522 TO FRAME # 5252 ANGLE 64.614 CRITICAL AMP AT CELL 34
 OPTION # 21

MAXIMUM U - 35.0
 AVERAGE U - 28.0

ANGLE
 1 9.7
 2 9.8
 3 10.3
 4 11.1
 5 12.1
 6 13.5
 7 14.8
 8 16.3
 9 17.9
 10 19.4
 11 20.9
 12 22.3
 13 23.8
 14 25.4
 15 26.8
 16 28.4
 17 29.8
 18 31.3
 19 32.9
 20 34.3
 21 35.8
 22 37.3
 23 38.7
 24 40.2
 25 41.7
 26 43.2
 27 44.5
 28 46.1
 29 47.5
 30 49.0
 31 50.5
 32 52.0
 33 53.4
 34 54.9
 35 56.5
 36 57.9
 37 59.5
 38 60.9
 39 62.4
 40 63.7
 41 64.3

R
 1 145.8
 2 156.1
 3 166.4
 4 176.3
 5 187.1
 6 197.4
 7 207.8
 8 218.1
 9 228.4
 10 238.8
 11 249.1
 12 259.5
 13 269.8
 14 280.1
 15 300.8

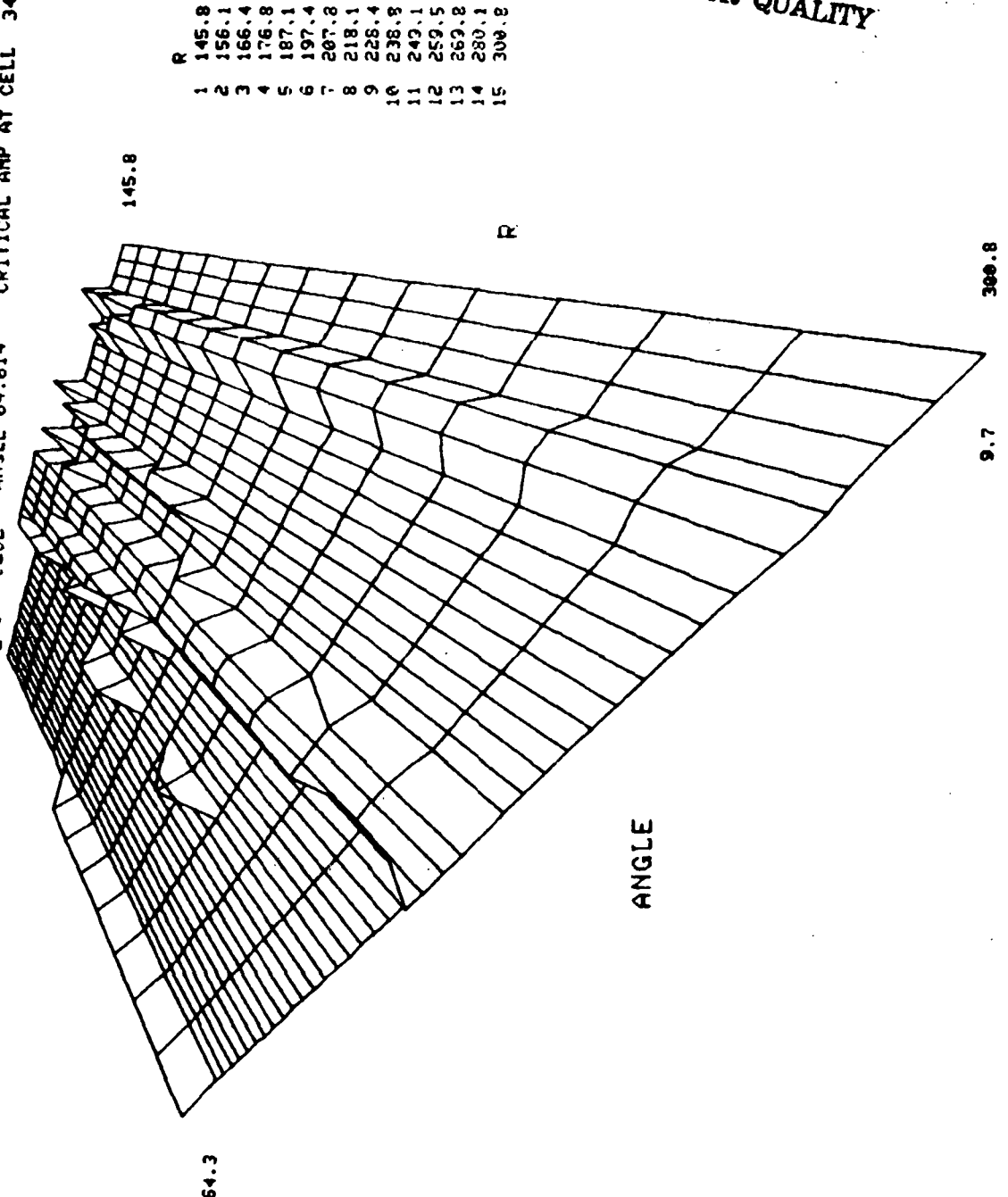


U, R, A DISPLAY (VELOCITY AT I_max)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 5 FRAME # 4620 ANGLE 9.528 TO FRAME # 5252 ANGLE 64.614 CRITICAL AMP AT CELL 34
 OPTION # 22

MAXIMUM U - 32.0
 AVERAGE U - 6.3

ANGLE	
1	9.7
2	9.8
3	10.3
4	11.1
5	12.1
6	13.5
7	14.8
8	16.3
9	17.9
10	19.4
11	20.9
12	22.3
13	23.8
14	25.4
15	26.8
16	28.4
17	29.8
18	31.3
19	32.9
20	34.3
21	35.8
22	37.3
23	38.7
24	40.2
25	41.7
26	43.2
27	44.5
28	46.1
29	47.5
30	49.0
31	50.5
32	52.0
33	53.4
34	54.9
35	56.5
36	57.9
37	59.5
38	60.9
39	62.4
40	63.7
41	64.3

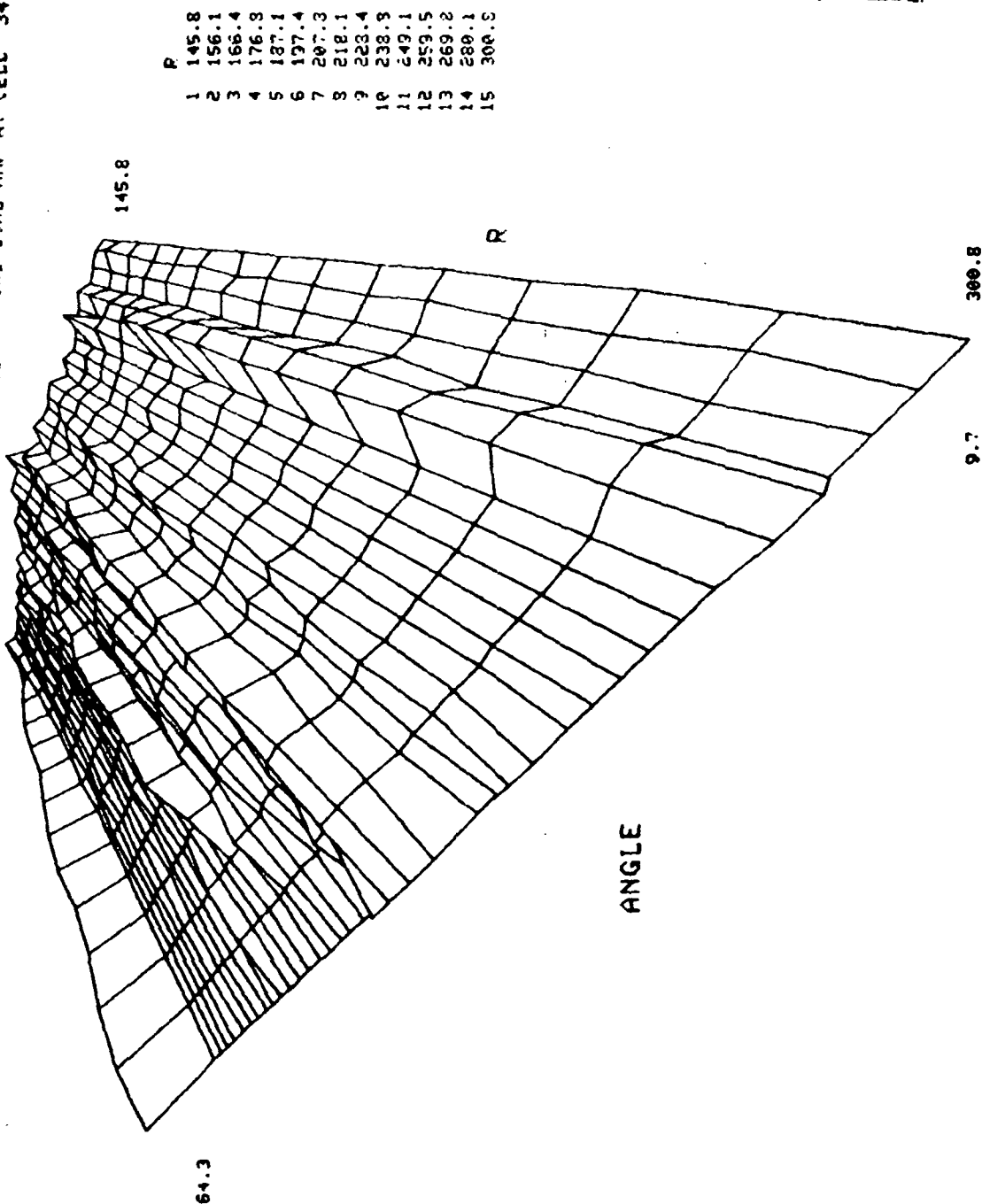


R	
1	145.8
2	156.1
3	166.4
4	176.8
5	187.1
6	197.4
7	207.8
8	218.1
9	228.4
10	238.8
11	249.1
12	259.5
13	269.8
14	280.1
15	300.8

U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

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NASA PROJECT DUST DEVIL DAY 239 RUN # 17 TAPE 1 OF 2-20829
 SCAN # 5 FRAME # 4620 ANGLE 9.522 TO FRAME # 5252 ANGLE 54.614 CRITICAL AMP AT CELL 34
 OPTION # 31



R
 1 145.8
 2 156.1
 3 166.4
 4 176.3
 5 187.1
 6 197.4
 7 207.3
 8 218.1
 9 223.4
 10 238.3
 11 249.1
 12 259.5
 13 269.2
 14 280.1
 15 300.8

ANGLE
 1 9.7
 2 9.8
 3 10.3
 4 11.1
 5 12.1
 6 13.5
 7 14.8
 8 16.3
 9 17.9
 10 19.4
 11 20.9
 12 22.3
 13 23.8
 14 25.4
 15 26.8
 16 28.4
 17 29.8
 18 31.3
 19 32.9
 20 34.3
 21 35.8
 22 37.3
 23 38.7
 24 40.2
 25 41.7
 26 43.2
 27 44.5
 28 46.1
 29 47.5
 30 49.0
 31 50.5
 32 52.0
 33 53.4
 34 54.9
 35 56.5
 36 57.9
 37 59.5
 38 60.9
 39 62.4
 40 63.7
 41 64.3

U * Imax, R, A DISPLAY

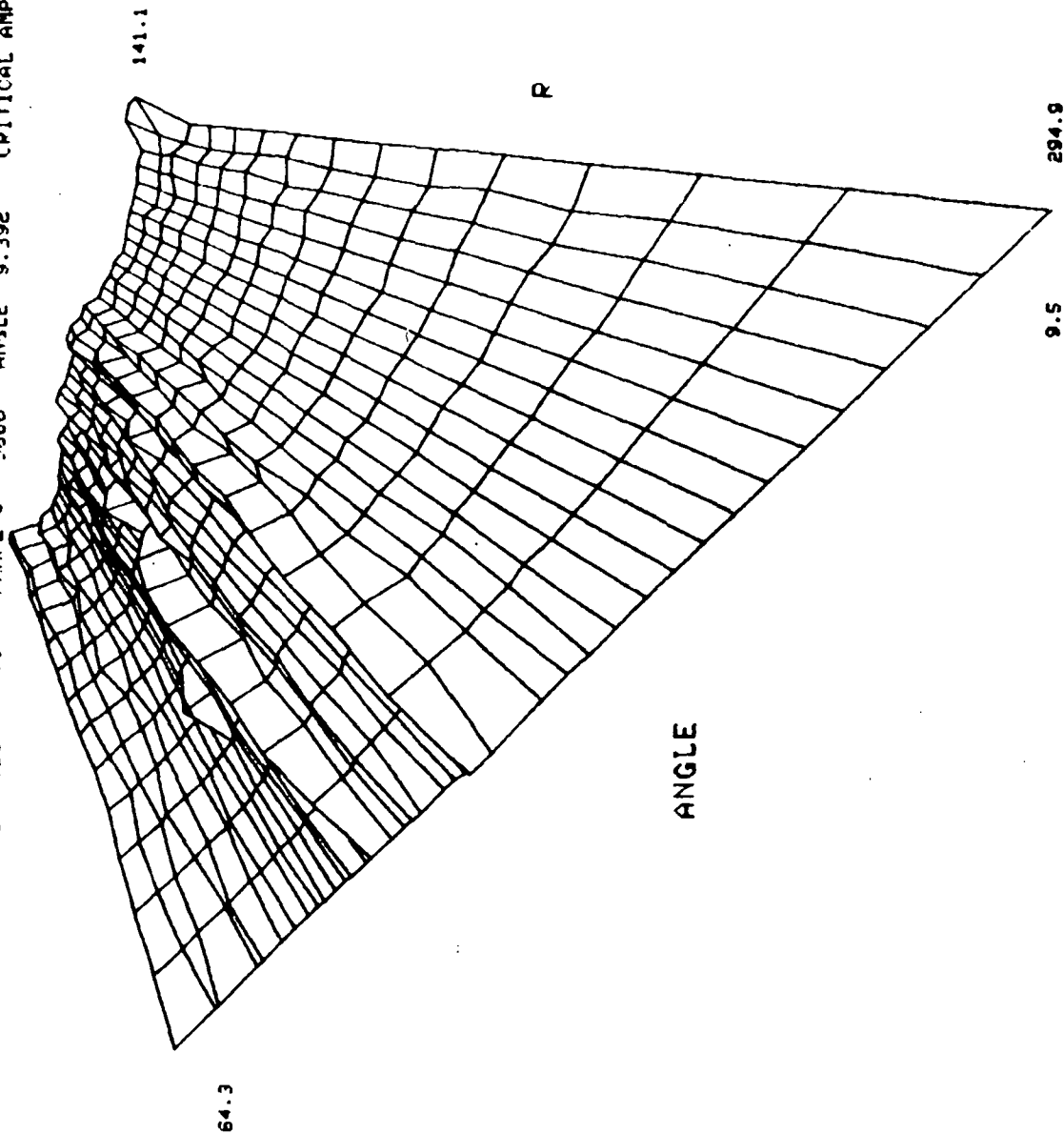
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* NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 6 FRAME # 5252 ANGLE 64.614 TO FRAME # 5866 ANGLE 9.392 CRITICAL AMP AT CELL 34
 OPTION # 11

MAXIMUM I - 115.0
 AVERAGE I - 37.5

ANGLE
1 64.3
2 63.7
3 62.8
4 61.7
5 60.4
6 59.0
7 57.4
8 55.9
9 54.5
10 52.9
11 51.4
12 50.0
13 48.5
14 47.1
15 45.7
16 44.1
17 42.8
18 41.3
19 39.7
20 38.3
21 36.8
22 35.3
23 33.9
24 32.3
25 30.8
26 29.3
27 27.8
28 26.3
29 24.8
30 23.2
31 21.7
32 20.3
33 18.8
34 17.2
35 15.6
36 14.1
37 12.7
38 11.2
39 10.0
40 9.5

R
1 141.1
2 151.4
3 161.6
4 171.9
5 182.1
6 192.4
7 202.6
8 212.9
9 223.1
10 233.4
11 243.6
12 253.9
13 264.1
14 274.4
15 294.9



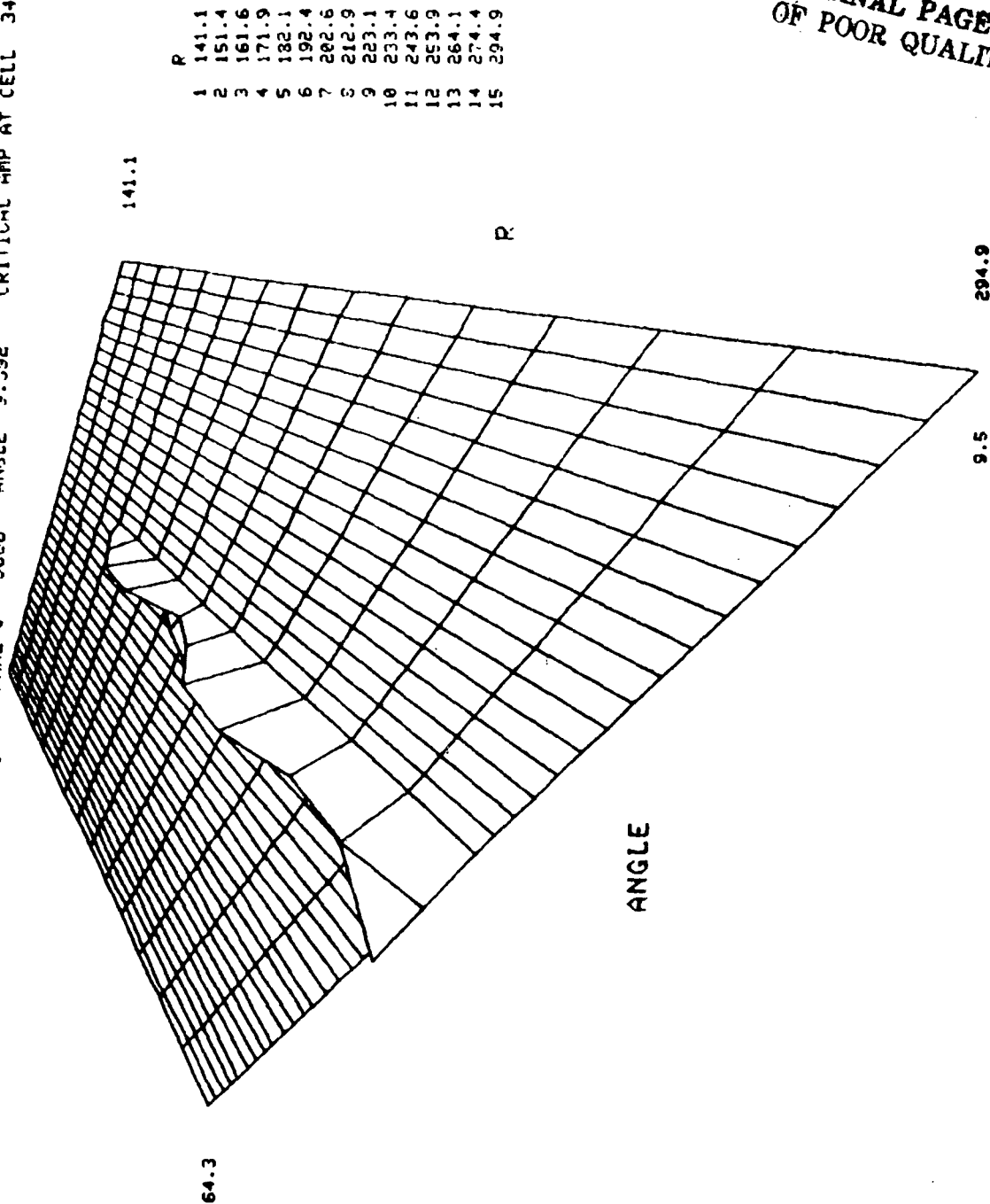
IMAX, R, A DISPLAY

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20229
SCAN # 6 FRAME # 5252 ANGLE 64.614 TO FRAME # 5866 ANGLE 9.392 CRITICAL AMP AT CELL 34
OPTION # 12

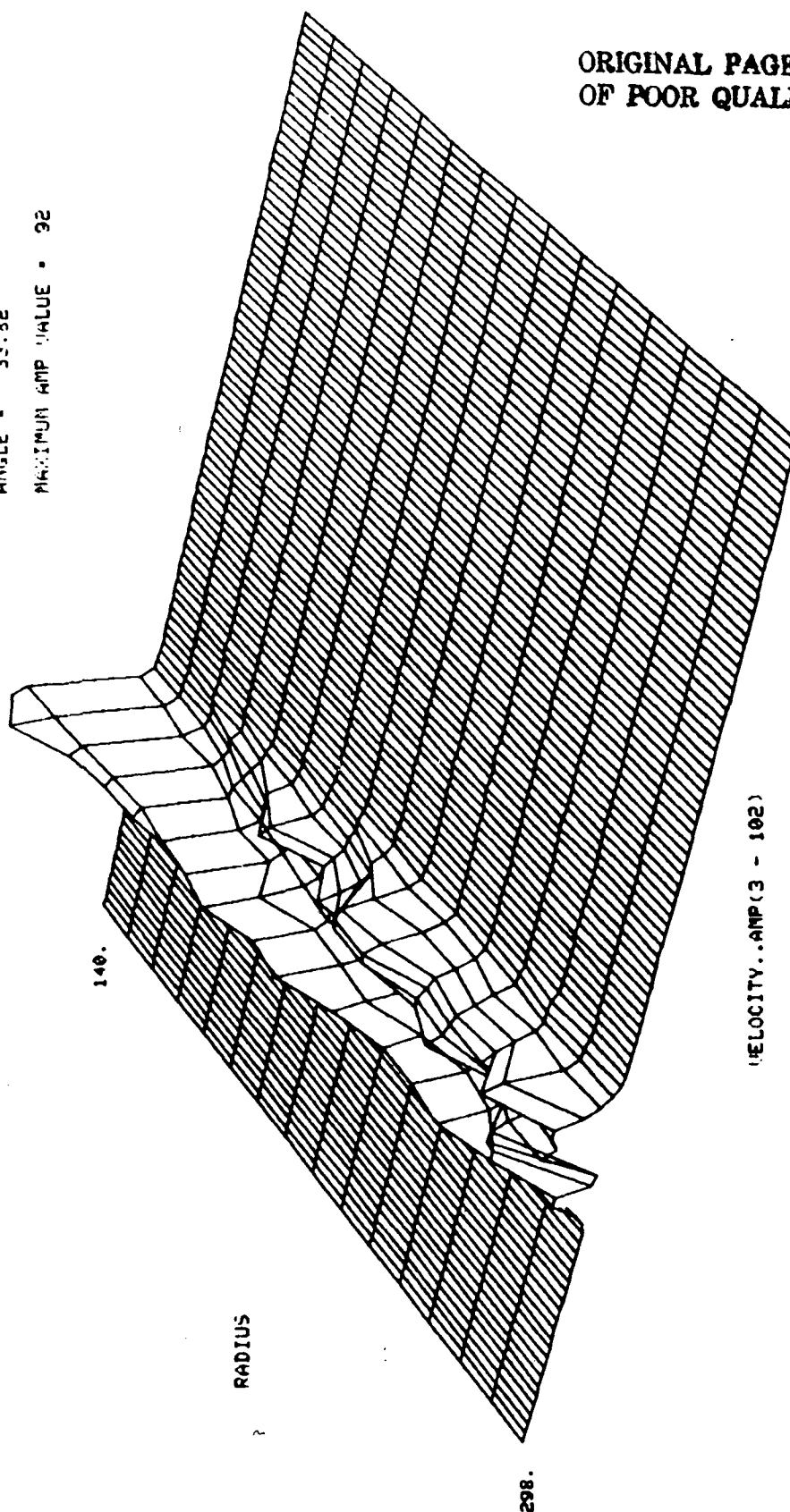
MAXIMUM I = 43.0
AVERAGE I = 0.8

ANGLE
1 64.3
2 63.7
3 62.8
4 61.7
5 60.4
6 59.0
7 57.4
8 55.9
9 54.5
10 52.9
11 51.4
12 50.0
13 48.5
14 47.1
15 45.7
16 44.1
17 42.8
18 41.3
19 39.7
20 38.3
21 36.8
22 35.3
23 33.9
24 32.3
25 30.8
26 29.3
27 27.8
28 26.3
29 24.8
30 23.2
31 21.7
32 20.3
33 18.8
34 17.2
35 15.6
36 14.1
37 12.7
38 11.2
39 10.0
40 9.5



I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
SCAN # 6 FRAME # 5252 ANGLE 64.614 TO FRAME # 5866 ANGLE 9.392 CRITICAL AMP AT CELL 34
FRAME # 5596 TO 5612
ANGLE = 33.82
MAXIMUM AMP VALUE = 92

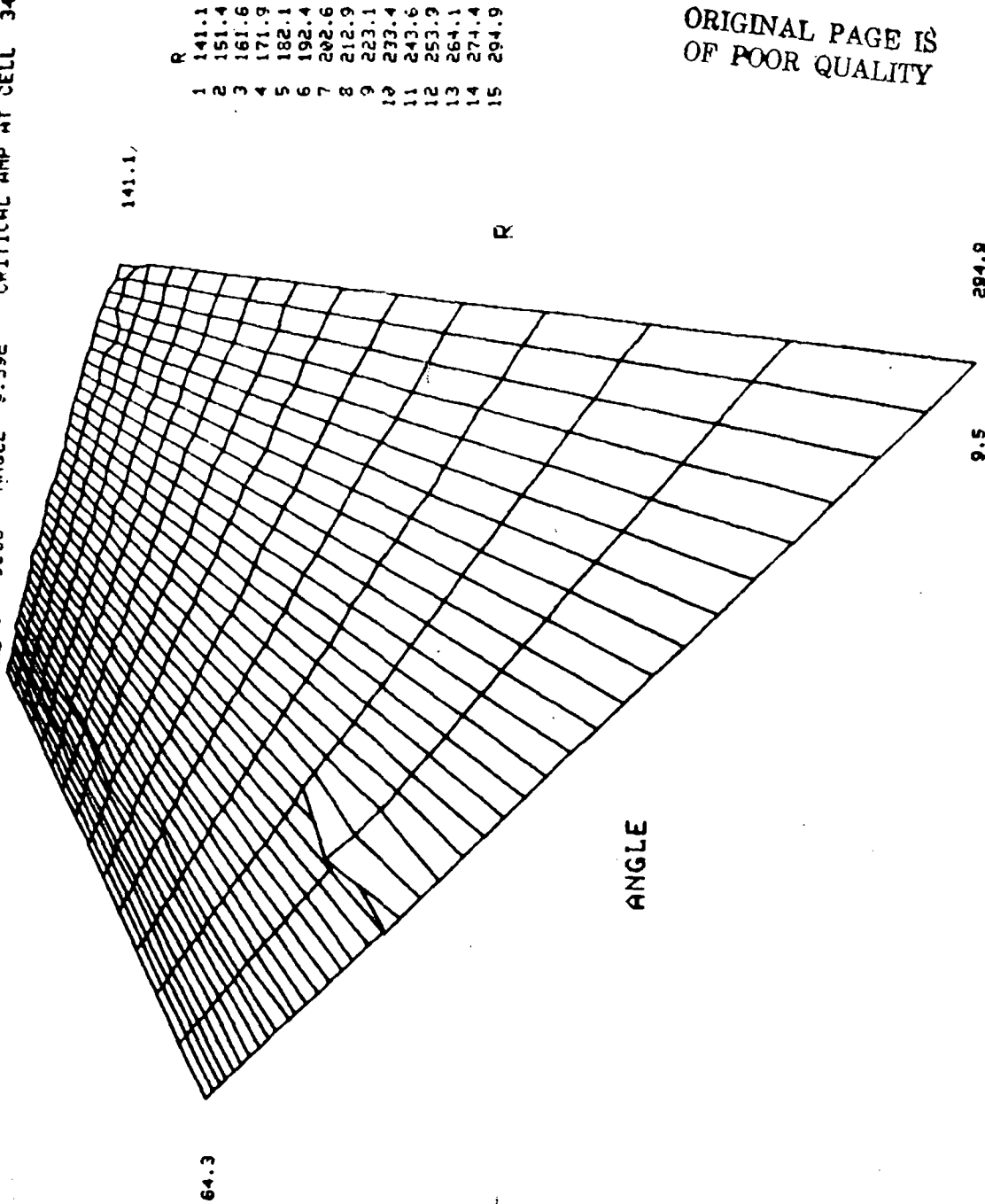


NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20383
 SCAN # 6 FRAME # 5252 ANGLE 54.614 TO FRAME # 5866 ANGLE 9.392 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 43.0
 AVERAGE U - 27.9

ANGLE
 1 64.3
 2 63.7
 3 62.8
 4 61.7
 5 60.4
 6 59.0
 7 57.4
 8 55.9
 9 54.5
 10 52.9
 11 51.4
 12 50.0
 13 48.5
 14 47.1
 15 45.7
 16 44.1
 17 42.8
 18 41.3
 19 39.7
 20 38.3
 21 36.8
 22 35.3
 23 33.9
 24 32.3
 25 30.8
 26 29.3
 27 27.8
 28 26.3
 29 24.8
 30 23.2
 31 21.7
 32 20.3
 33 18.8
 34 17.2
 35 15.6
 36 14.1
 37 12.7
 38 11.2
 39 10.0
 40 9.5



R
 1 141.1
 2 151.4
 3 161.6
 4 171.9
 5 182.1
 6 192.4
 7 202.6
 8 212.9
 9 223.1
 10 233.4
 11 243.6
 12 253.9
 13 264.1
 14 274.4
 15 294.9

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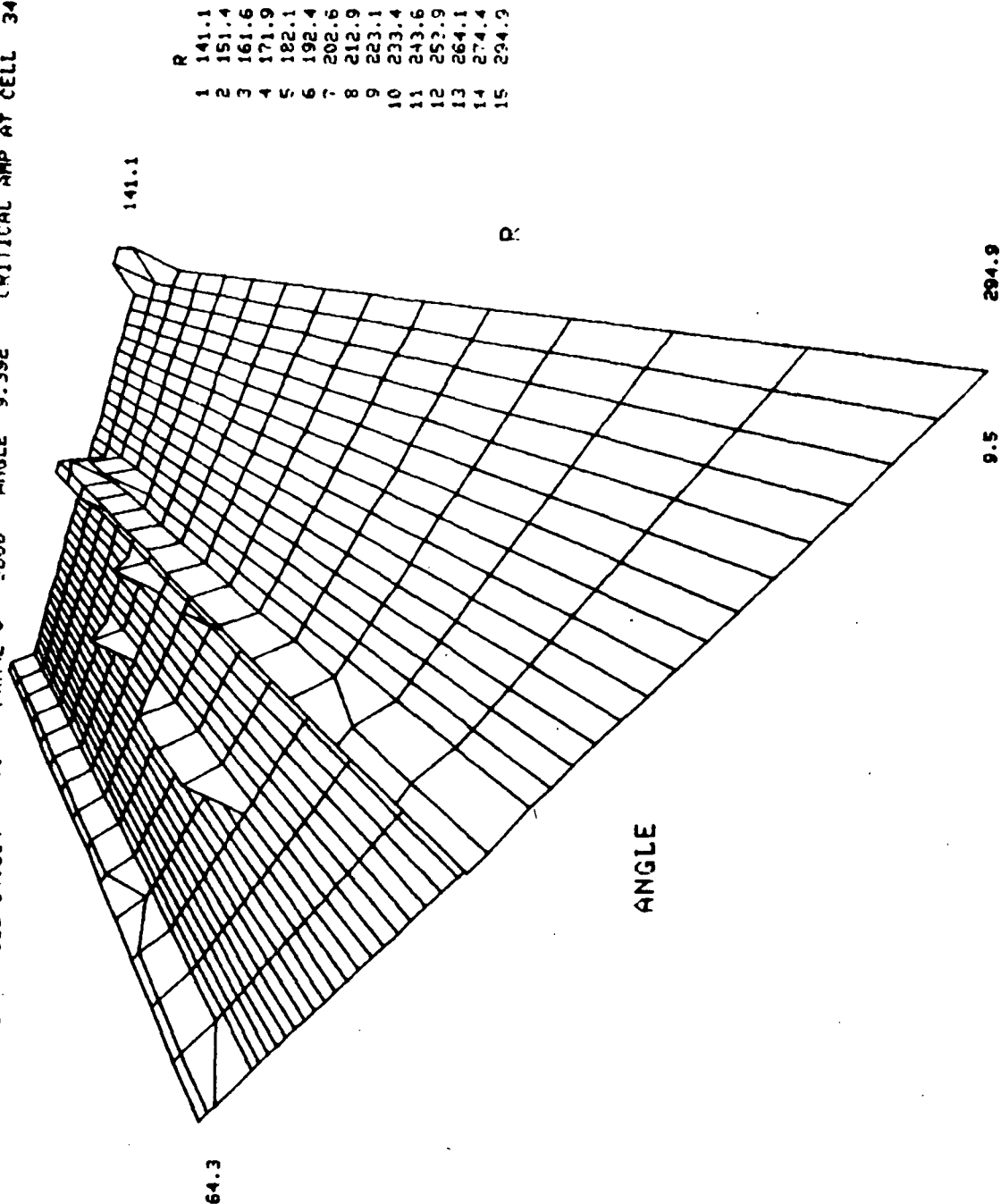
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 6 FRAME # 5252 ANGLE 64.614 TO FRAME # 5866 ANGLE 9.392 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 30.0

AVERAGE U - 3.7

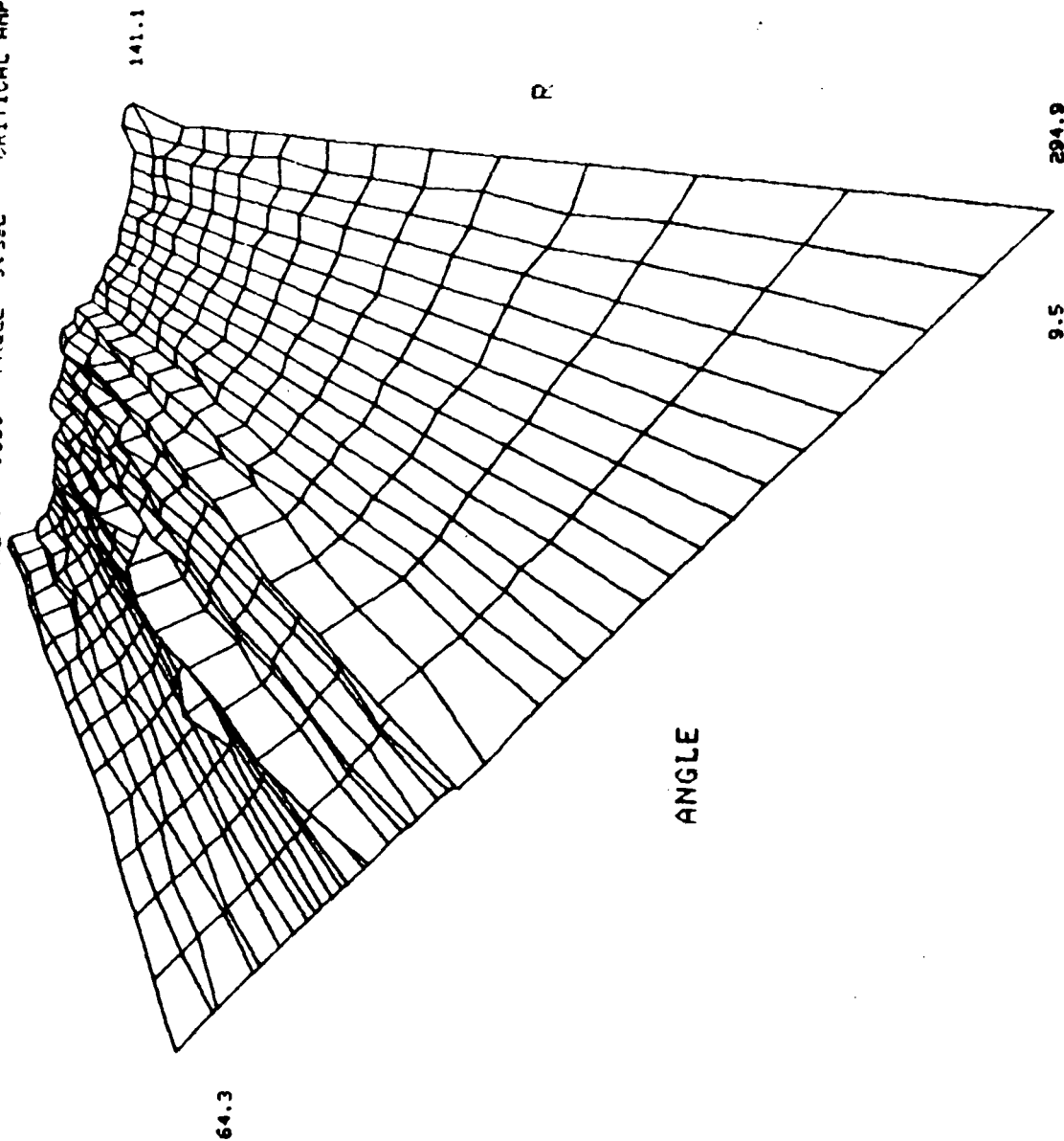
ANGLE
1 64.3
2 63.7
3 62.8
4 61.7
5 60.4
6 59.0
7 57.4
8 55.9
9 54.5
10 52.9
11 51.4
12 50.0
13 48.5
14 47.1
15 45.7
16 44.1
17 42.8
18 41.3
19 39.7
20 38.3
21 36.8
22 35.3
23 33.9
24 32.3
25 30.8
26 29.3
27 27.8
28 26.3
29 24.8
30 23.2
31 21.7
32 20.3
33 18.8
34 17.2
35 15.6
36 14.1
37 12.7
38 11.2
39 10.0
40 9.5



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 6 FRAME # 5252 ANGLE 64.614 TO FRAME # 5866 ANGLE 9.392 CRITICAL HWP AT CELL 34
 OPTION # 31

R
 1 141.1
 2 151.4
 3 161.6
 4 171.9
 5 182.1
 6 192.4
 7 202.6
 8 212.9
 9 223.1
 10 233.4
 11 243.6
 12 253.9
 13 264.1
 14 274.4
 15 294.9



ANGLE
 1 64.3
 2 63.7
 3 62.8
 4 61.7
 5 60.4
 6 59.0
 7 57.4
 8 55.9
 9 54.5
 10 52.9
 11 51.4
 12 50.0
 13 48.5
 14 47.1
 15 45.7
 16 44.1
 17 42.8
 18 41.3
 19 39.7
 20 38.3
 21 36.8
 22 35.3
 23 33.9
 24 32.3
 25 30.8
 26 29.3
 27 27.8
 28 26.3
 29 24.8
 30 23.2
 31 21.7
 32 20.3
 33 18.8
 34 17.2
 35 15.6
 36 14.1
 37 12.7
 38 11.2
 39 10.0
 40 9.5

U * I_{max}, R, A DISPLAY

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 7 FRAME # 5866 ANGLE 9.392 TO FRAME # 5505 ANGLE 64.552 CRITICAL AMP AT CELL 34

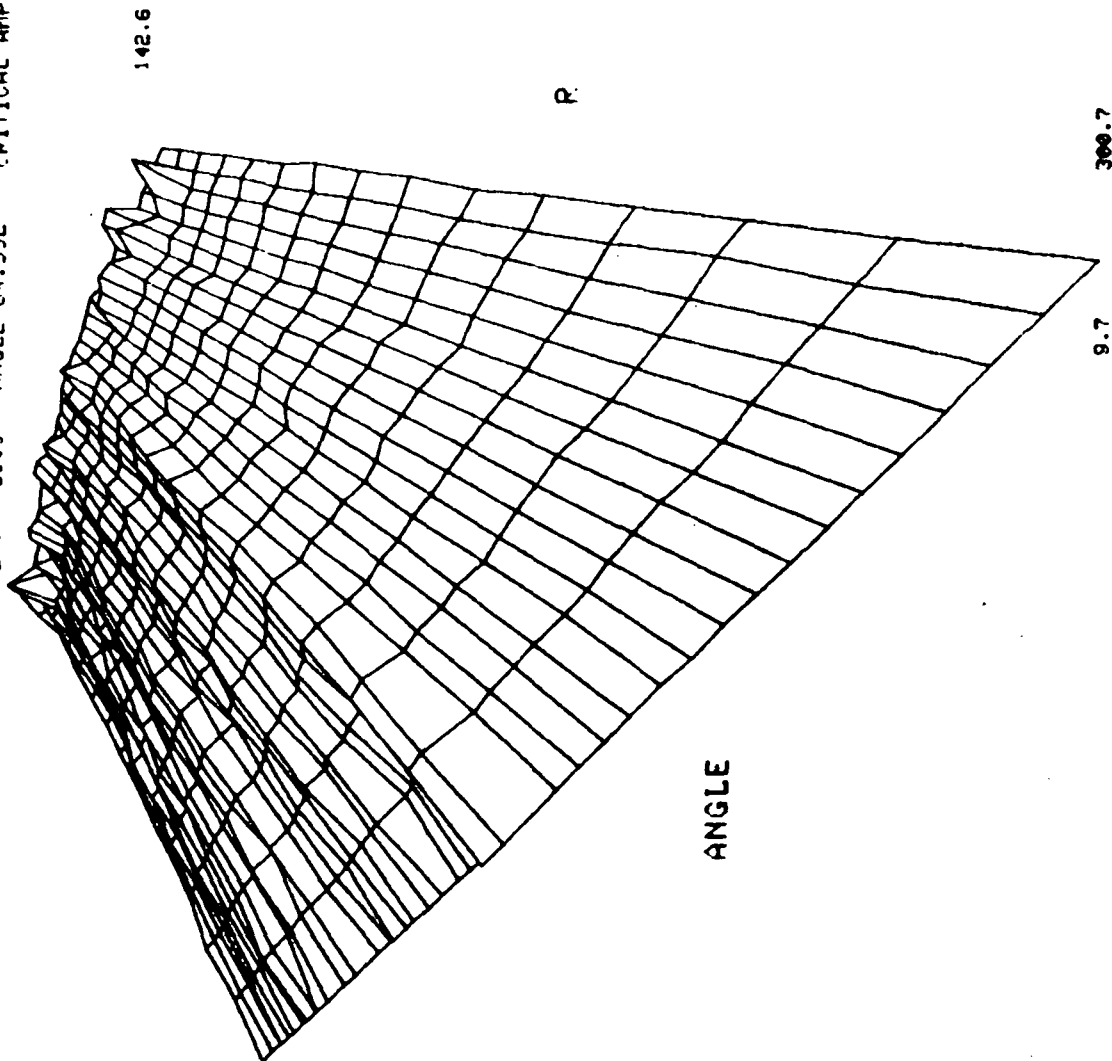
OPTION # 11

MAXIMUM I - 156.0

AVERAGE I - 63.9

ANGLE
 1 9.7
 2 10.1
 3 10.7
 4 11.6
 5 12.9
 6 14.2
 7 15.6
 8 17.2
 9 18.8
 10 20.2
 11 21.7
 12 23.2
 13 24.7
 14 26.2
 15 27.7
 16 29.2
 17 30.7
 18 32.2
 19 33.7
 20 35.2
 21 36.6
 22 38.1
 23 39.5
 24 41.1
 25 42.5
 26 43.9
 27 45.3
 28 46.9
 29 48.3
 30 49.8
 31 51.3
 32 52.8
 33 54.2
 34 55.7
 35 57.2
 36 58.7
 37 60.2
 38 61.8
 39 63.2
 40 64.2
 41 64.3

R
 1 142.6
 2 153.2
 3 163.7
 4 174.3
 5 184.8
 6 195.3
 7 205.9
 8 216.4
 9 226.9
 10 237.5
 11 248.0
 12 258.6
 13 269.1
 14 279.6
 15 290.1

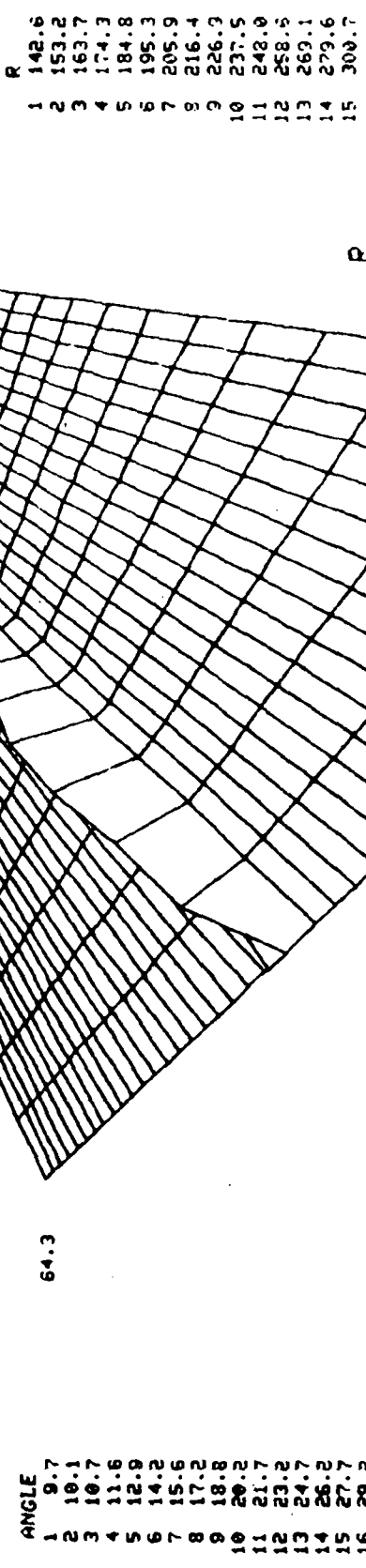


Imax, R, A DISPLAY

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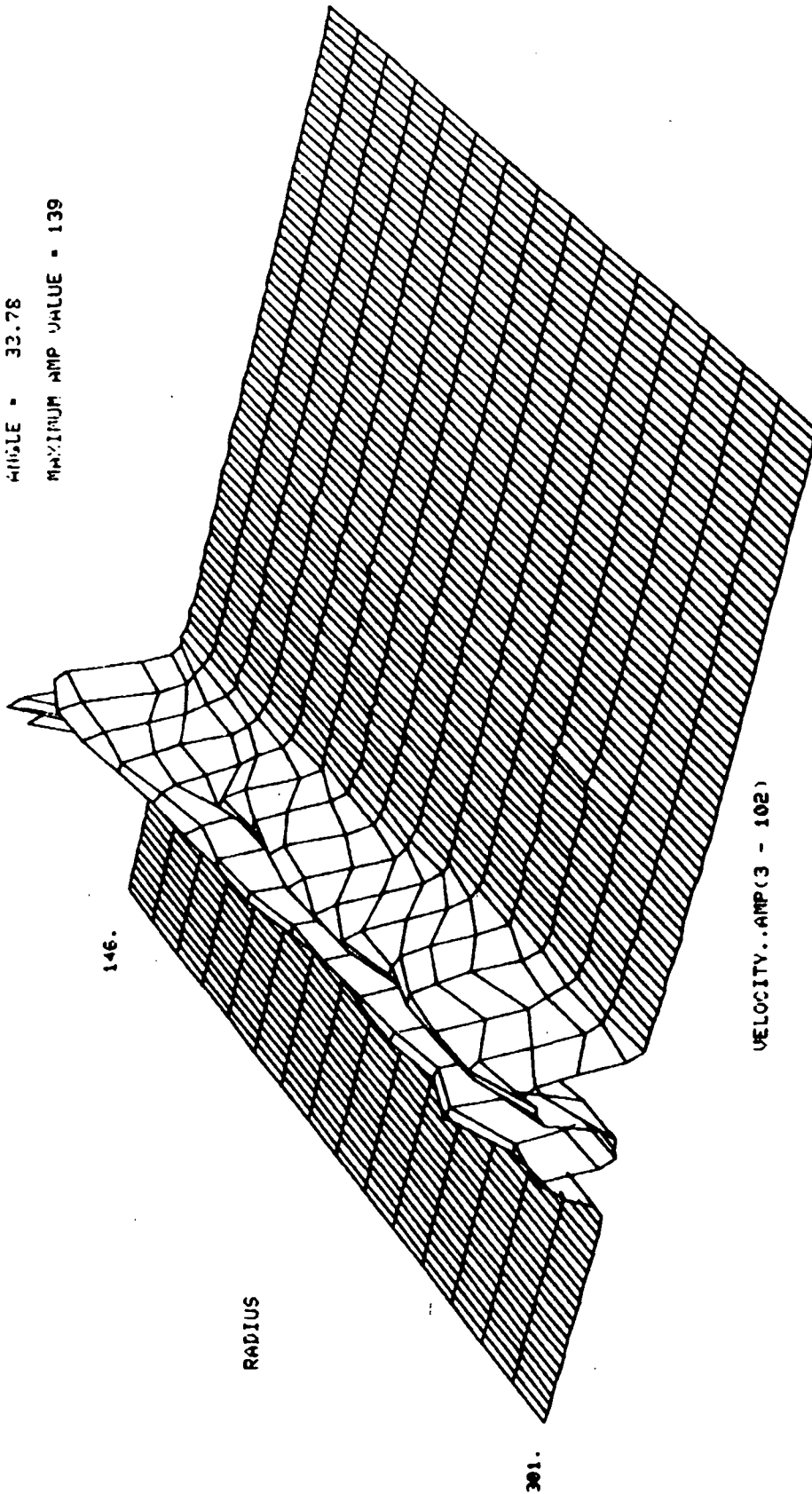
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20899
 SCAN # 7 FRAME # 5866 ANGLE 9.392 TO FRAME # 6505 ANGLE 64.552 CRITICAL AMP AT CELL 34
 OPTION # 12

MAXIMUM I - 96.0
 AVERAGE I - 2.1

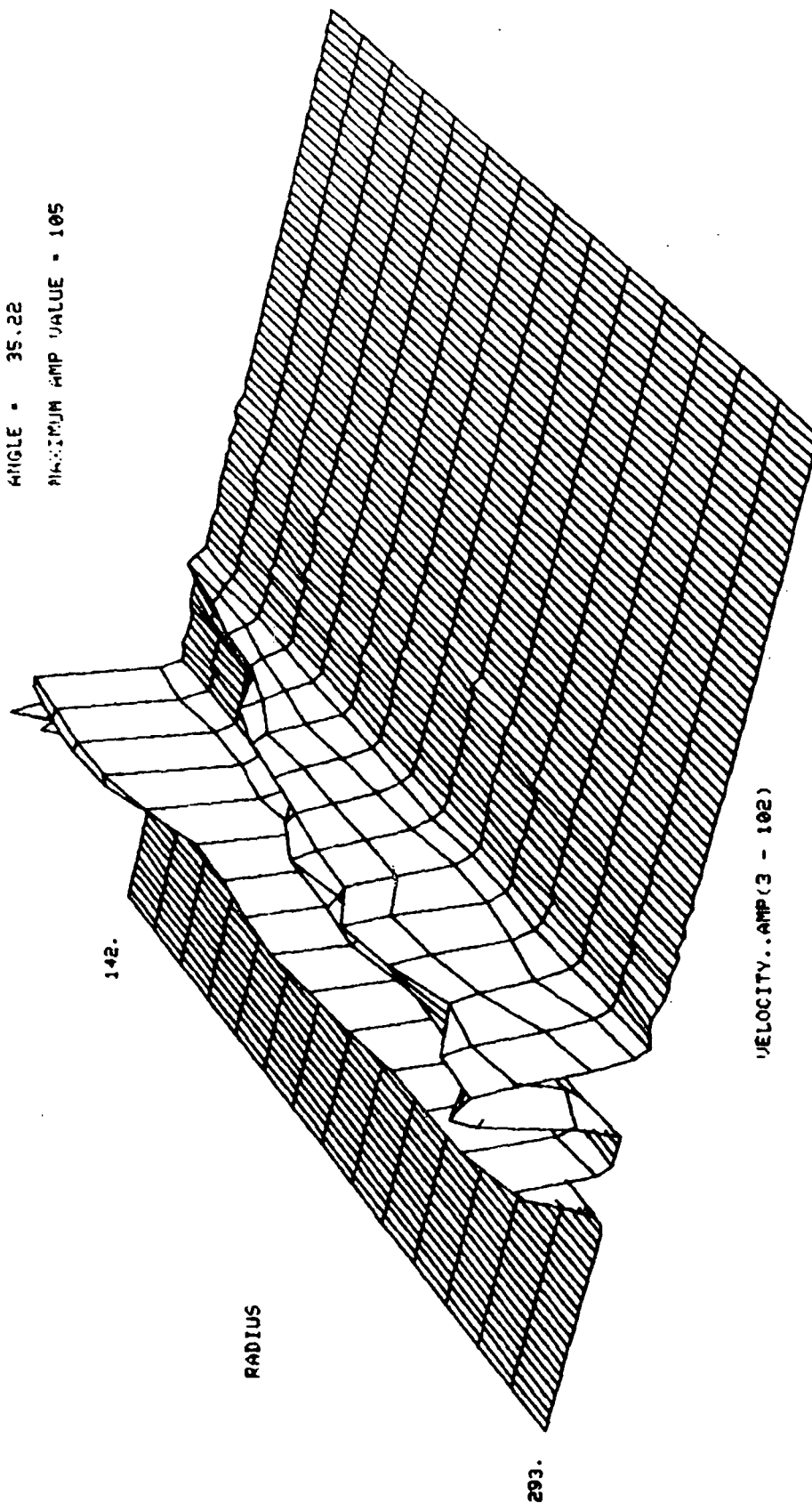


I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 7 FRAME # 5866 ANGLE 9.392 TO FRAME # 6505 ANGLE 64.552 CRITICAL AMP AT CELL 34
 FRAME # 6144 TO 6160
 ANGLE = 33.78
 MAXIMUM AMP VALUE = 139



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
SCAN # 7 FRAME # 5866 ANGLE 9.392 TO FRAME # 6505 ANGLE 64.552 CRITICAL AMP AT CELL 34
FRAME # 6160 TO 6175
ANGLE - 35.22
MAXIMUM AMP VALUE - 105

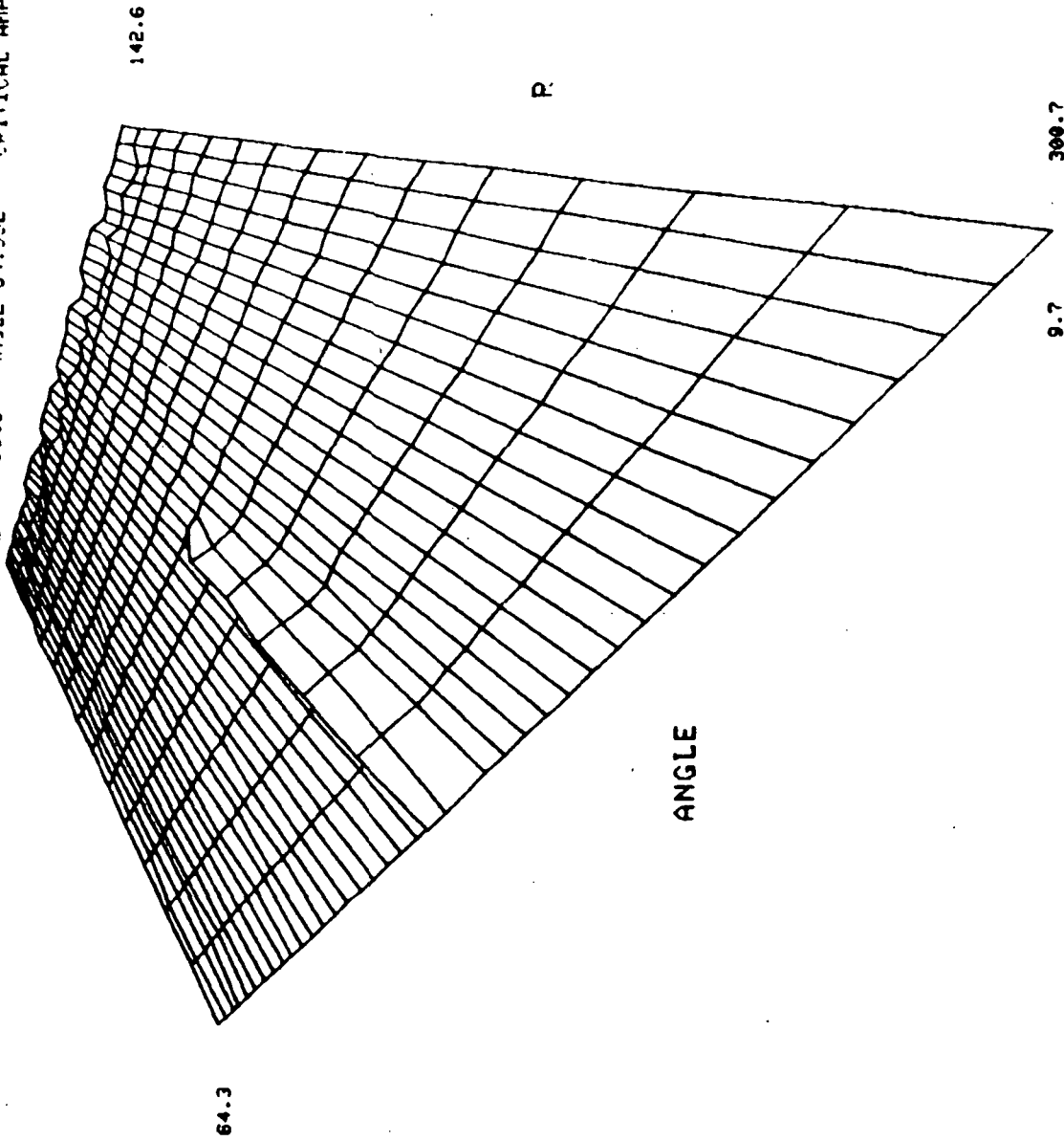


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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20289
SCAN # 7 FRAME # 5866 ANGLE 9.392 TO FRAME # 6505 ANGLE 64.552 OPTICAL AMP AT CELL 34
OPTION # 21

MAXIMUM U - 40.0
AVERAGE U - 28.0

ANGLE
1 9.7
2 10.1
3 10.7
4 11.6
5 12.9
6 14.2
7 15.6
8 17.2
9 18.8
10 20.2
11 21.7
12 23.2
13 24.7
14 26.2
15 27.7
16 29.2
17 30.7
18 32.2
19 33.7
20 35.2
21 36.6
22 38.1
23 39.5
24 41.1
25 42.5
26 43.9
27 45.3
28 46.9
29 48.3
30 49.8
31 51.3
32 52.8
33 54.2
34 55.7
35 57.2
36 58.7
37 60.2
38 61.8
39 63.2
40 64.2
41 64.3



R
1 142.6
2 153.2
3 163.7
4 174.3
5 184.8
6 195.3
7 205.9
8 216.4
9 226.9
10 237.5
11 248.0
12 258.6
13 269.1
14 279.6
15 300.7

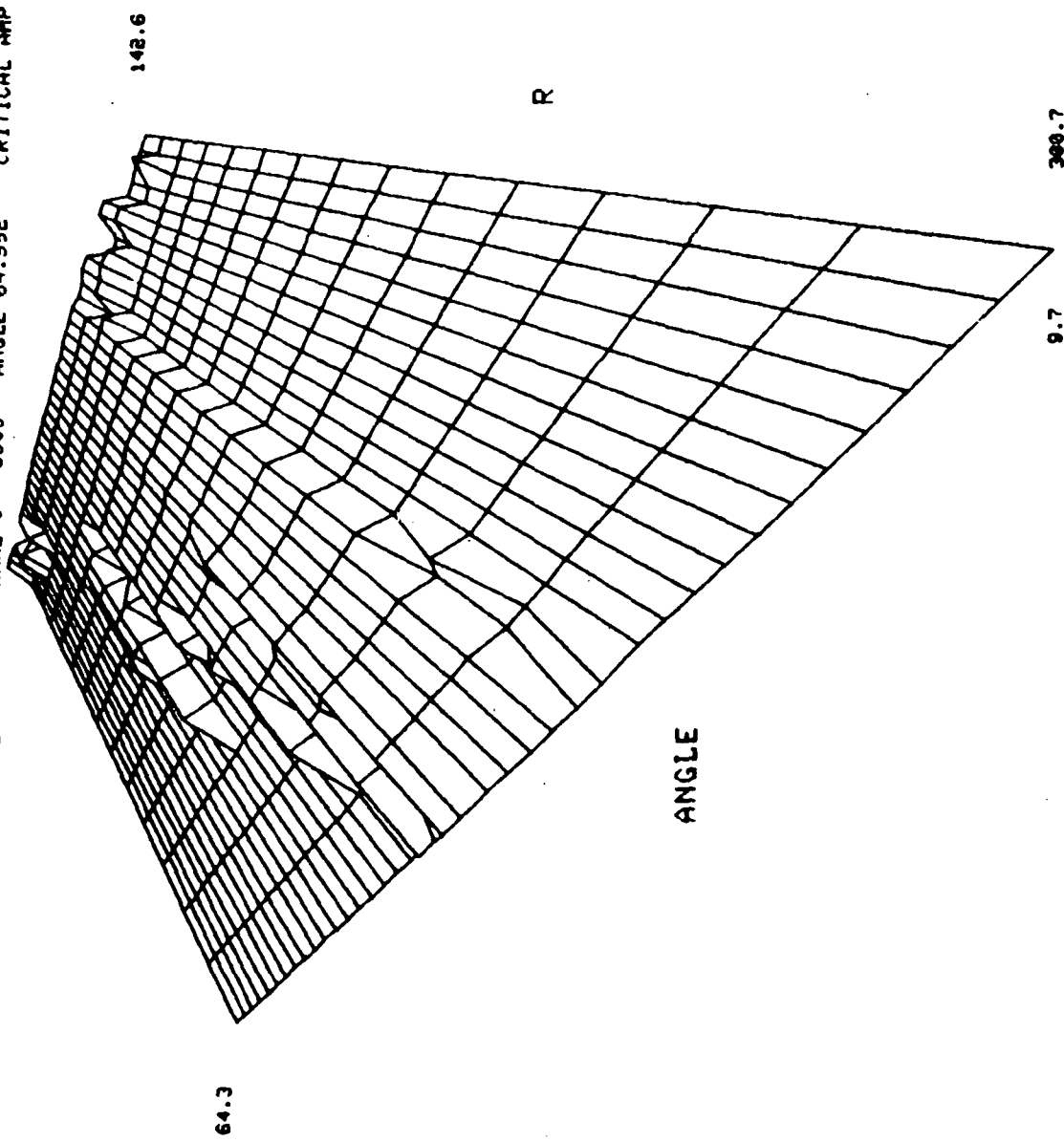
U, R, A DISPLAY (VELOCITY AT I MAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20289
SCAN # 7 FRAME # 5866 ANGLE 9.392 TO FRAME # 6505 MIGLE 64.552 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM V - 40.0
AVERAGE V - 12.2

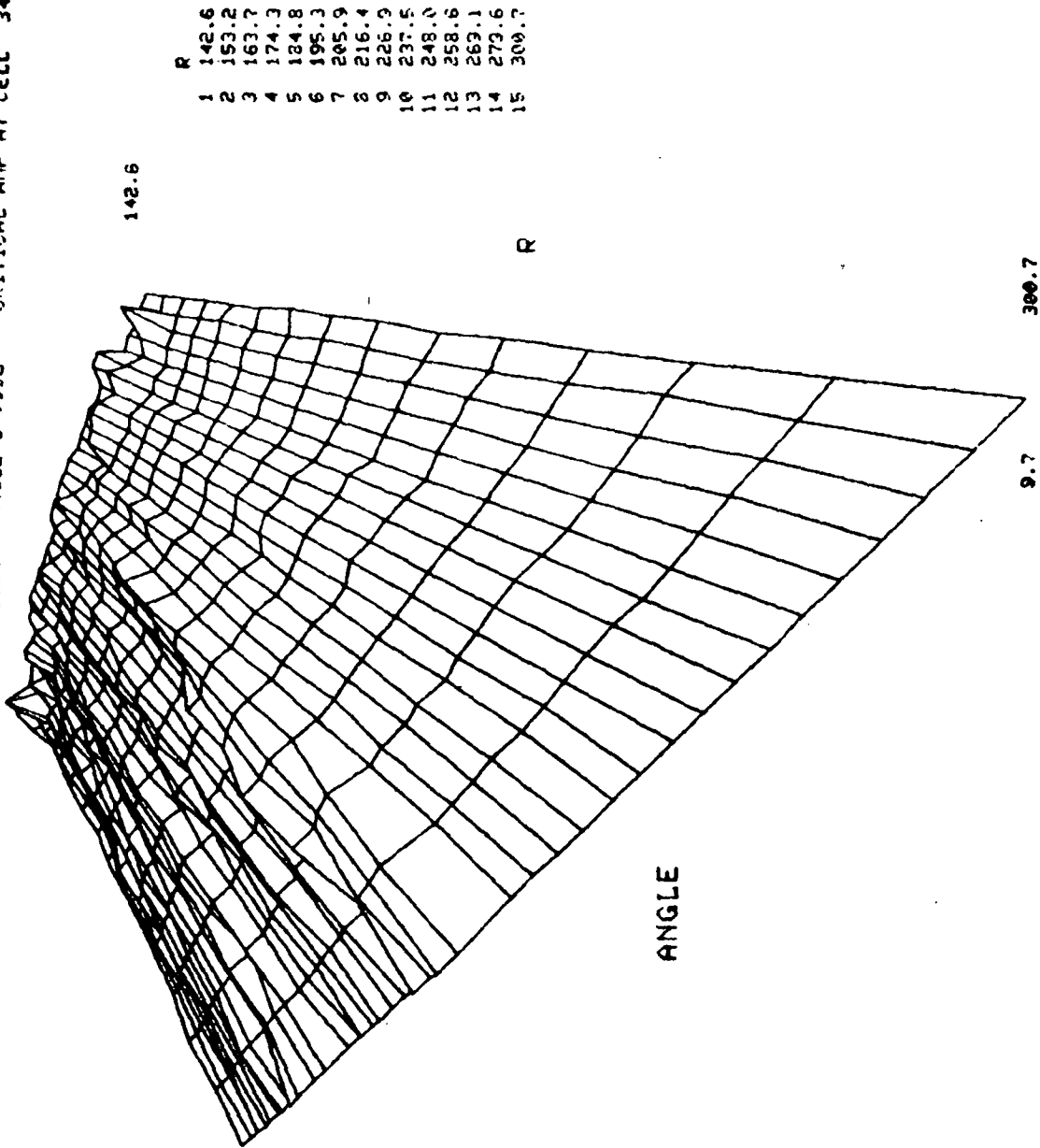
- ANGLE
- | | |
|----|------|
| 1 | 9.7 |
| 2 | 10.1 |
| 3 | 10.7 |
| 4 | 11.6 |
| 5 | 12.9 |
| 6 | 14.2 |
| 7 | 15.6 |
| 8 | 17.2 |
| 9 | 18.8 |
| 10 | 20.2 |
| 11 | 21.7 |
| 12 | 23.2 |
| 13 | 24.7 |
| 14 | 26.2 |
| 15 | 27.7 |
| 16 | 29.2 |
| 17 | 30.7 |
| 18 | 32.2 |
| 19 | 33.7 |
| 20 | 35.2 |
| 21 | 36.6 |
| 22 | 38.1 |
| 23 | 39.5 |
| 24 | 41.1 |
| 25 | 42.5 |
| 26 | 43.9 |
| 27 | 45.3 |
| 28 | 46.9 |
| 29 | 48.3 |
| 30 | 49.8 |
| 31 | 51.3 |
| 32 | 52.8 |
| 33 | 54.2 |
| 34 | 55.7 |
| 35 | 57.2 |
| 36 | 58.7 |
| 37 | 60.2 |
| 38 | 61.8 |
| 39 | 63.2 |
| 40 | 64.3 |
- R
- | | |
|----|-------|
| 1 | 142.6 |
| 2 | 153.2 |
| 3 | 163.7 |
| 4 | 174.3 |
| 5 | 184.8 |
| 6 | 195.3 |
| 7 | 205.9 |
| 8 | 216.4 |
| 9 | 226.9 |
| 10 | 237.5 |
| 11 | 248.0 |
| 12 | 258.6 |
| 13 | 269.1 |
| 14 | 279.6 |
| 15 | 300.7 |



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U_{max}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 286 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 7 FRAME # 5866 ANGLE 9.392 TO FRAME # 6505 ANGLE 64.552 CRITICAL AMP AT CELL 34
 OPTION # 31



ANGLE
1 9.7
2 10.1
3 10.7
4 11.6
5 12.9
6 14.2
7 15.6
8 17.2
9 18.8
10 20.2
11 21.7
12 23.2
13 24.7
14 26.2
15 27.7
16 29.2
17 30.7
18 32.2
19 33.7
20 35.2
21 36.6
22 38.1
23 39.5
24 41.1
25 42.5
26 43.9
27 45.3
28 46.9
29 48.3
30 49.8
31 51.3
32 52.8
33 54.2
34 55.7
35 57.2
36 58.7
37 60.2
38 61.8
39 63.2
40 64.2
41 64.3

R
1 142.6
2 153.2
3 163.7
4 174.3
5 184.8
6 195.3
7 205.9
8 216.4
9 226.9
10 237.5
11 248.0
12 258.6
13 269.1
14 279.6
15 300.7

U x Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 8 FRAME # 6505 ANGLE 64.552 TO FRAME # 7111 ANGLE 9.326 CRITICAL AMP AT CELL 34

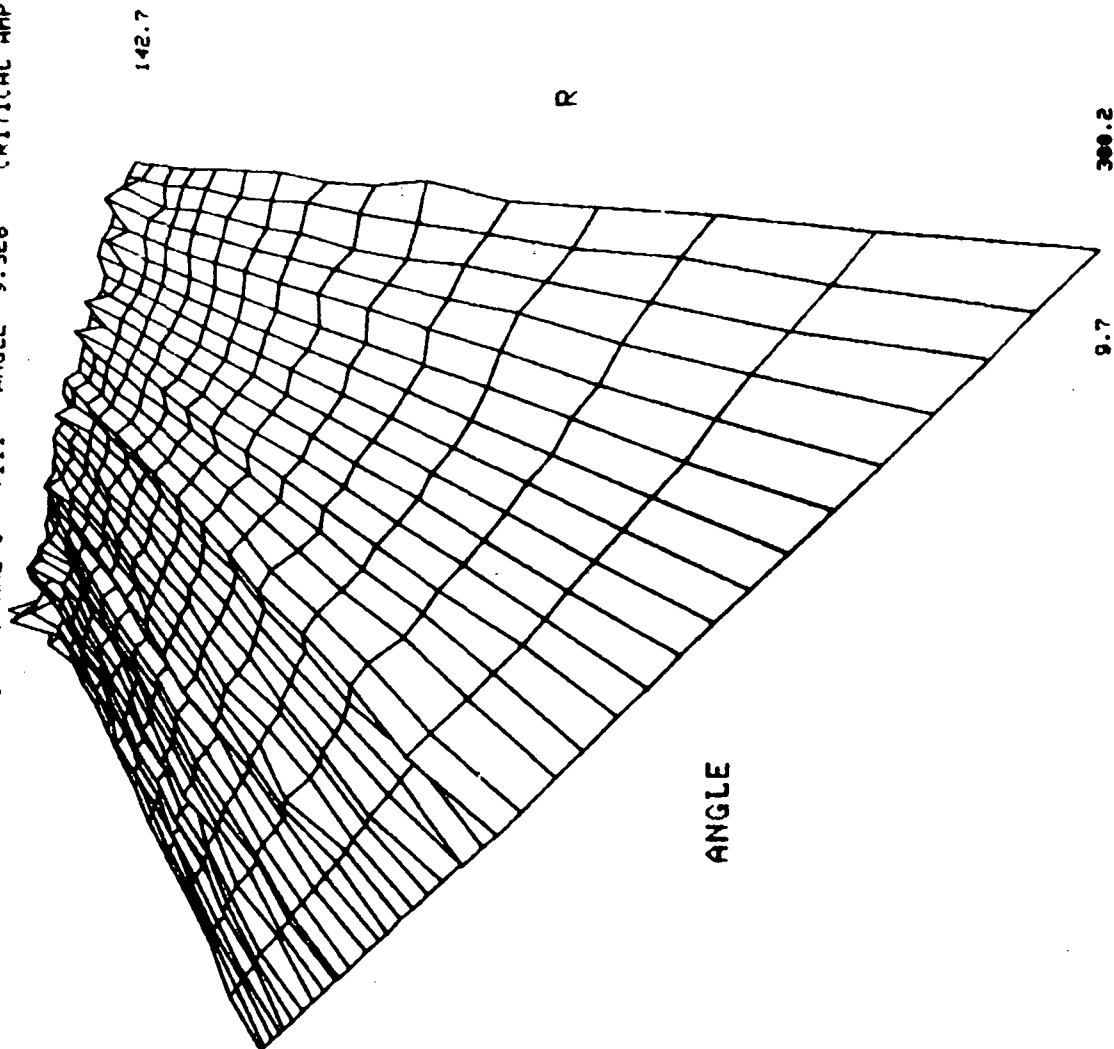
OPTION # 11

MAXIMUM I - 161.0

AVERAGE I - 85.2

ANGLE
1 63.9
2 63.2
3 62.2
4 61.1
5 59.7
6 58.2
7 56.6
8 55.1
9 53.6
10 52.1
11 50.7
12 49.2
13 47.7
14 46.3
15 44.8
16 43.4
17 41.9
18 40.4
19 39.0
20 37.5
21 36.0
22 34.5
23 33.0
24 31.5
25 30.0
26 28.5
27 27.0
28 25.5
29 24.0
30 22.4
31 20.9
32 19.4
33 17.9
34 16.4
35 14.8
36 13.3
37 11.8
38 10.5
39 9.7

R
1 142.7
2 153.2
3 163.7
4 174.2
5 184.7
6 195.2
7 205.7
8 216.2
9 226.7
10 237.2
11 247.7
12 258.2
13 268.7
14 279.2
15 300.2



IMAX, R, A DISPLAY

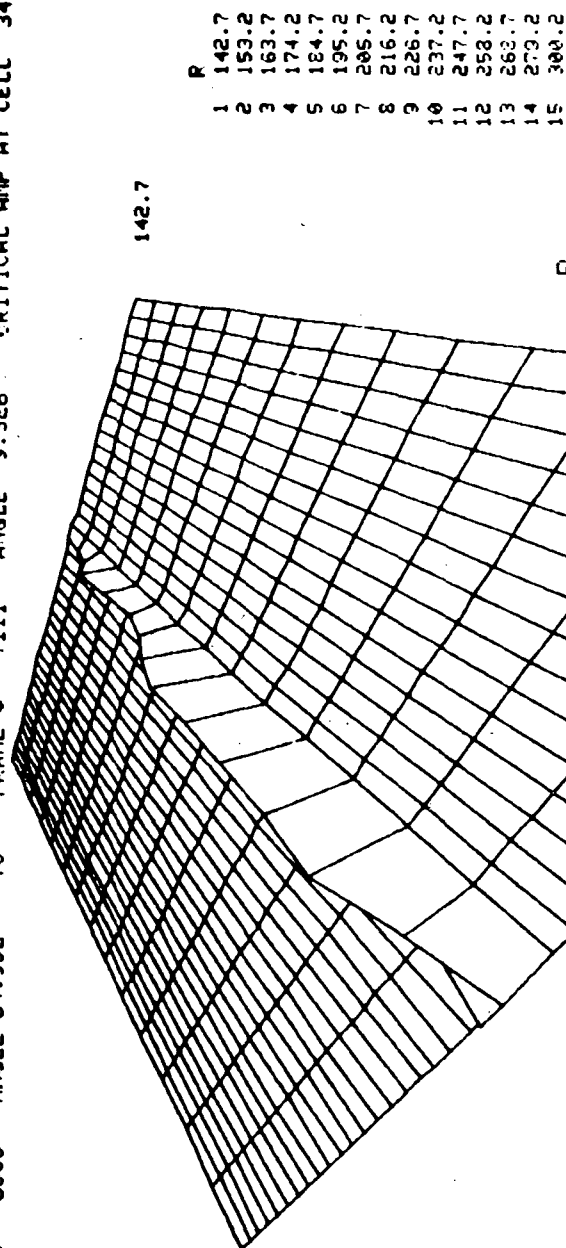
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 * SCAN # 8 FRAME # 6505 ANGLE 64.552 TO FRAME # 7111 ANGLE 9.326 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 113.0

AVERAGE I - 3.3

ANGLE
1 63.9
2 63.2
3 62.2
4 61.1
5 59.7
6 58.2
7 56.6
8 55.1
9 53.6
10 52.1
11 50.7
12 49.2
13 47.7
14 46.3
15 44.8
16 43.4
17 41.9
18 40.4
19 39.0
20 37.5
21 36.0
22 34.5
23 33.0
24 31.5
25 30.0
26 28.5
27 27.0
28 25.5
29 24.0
30 22.4
31 20.9
32 19.4
33 17.9
34 16.4
35 14.8
36 13.3
37 11.8
38 10.5
39 9.7



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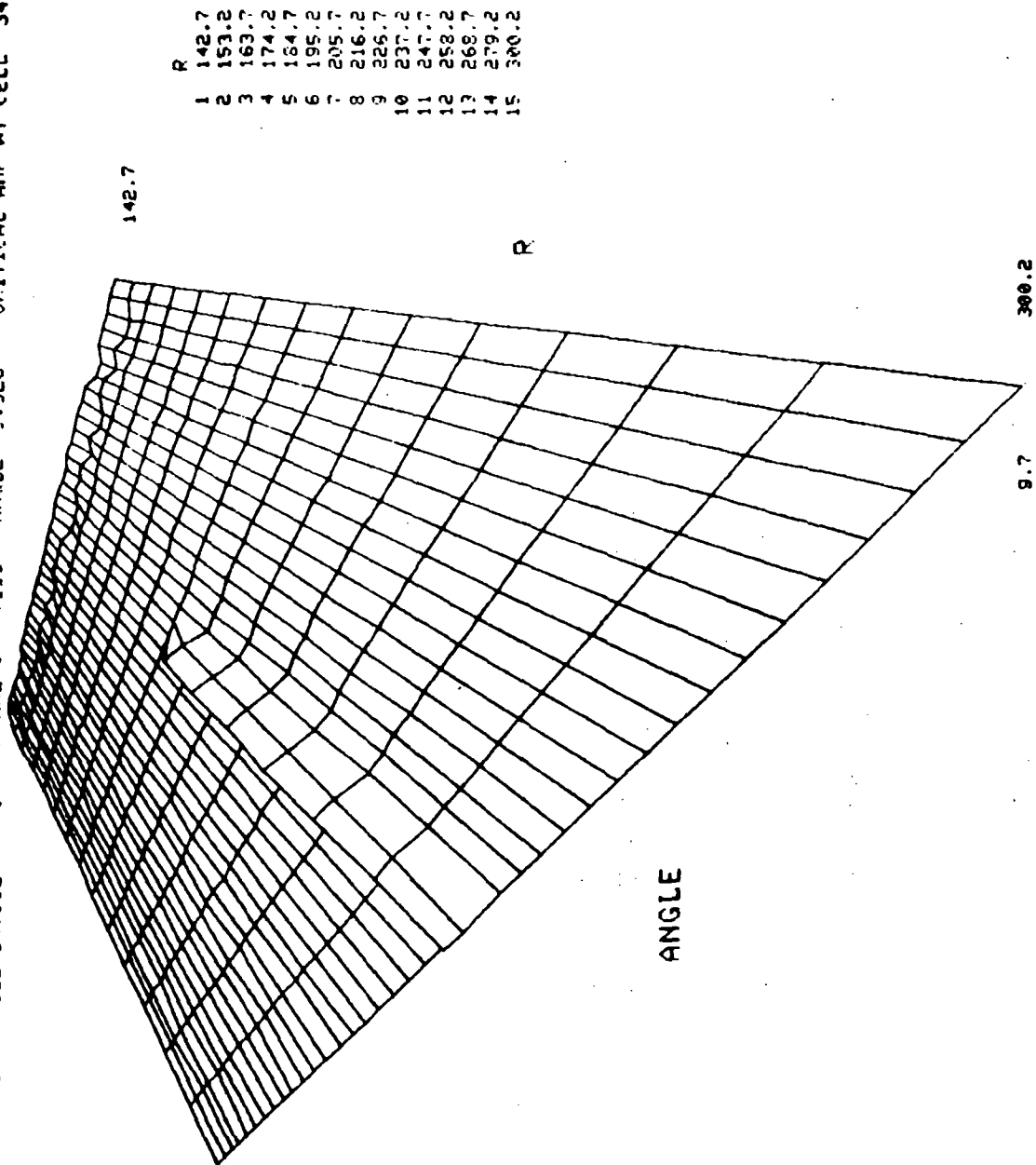
I, R, A DISPLAY AT VELOCITY CELL 34

* NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 8 FRAME # 6505 ANGLE 64.552 TO FRAME # 7111 ANGLE 3.326 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 40.0
 AVERAGE U - 27.9

ANGLE
 1 63.9
 2 63.2
 3 62.2
 4 61.1
 5 59.7
 6 58.2
 7 56.6
 8 55.1
 9 53.6
 10 52.1
 11 50.7
 12 49.2
 13 47.7
 14 46.3
 15 44.8
 16 43.4
 17 41.9
 18 40.4
 19 39.0
 20 37.5
 21 36.0
 22 34.5
 23 33.0
 24 31.5
 25 30.0
 26 28.5
 27 27.0
 28 25.5
 29 24.0
 30 22.4
 31 20.9
 32 19.4
 33 17.9
 34 16.4
 35 14.8
 36 13.3
 37 11.8
 38 10.5
 39 9.7



R
 1 142.7
 2 153.2
 3 163.7
 4 174.2
 5 184.7
 6 195.2
 7 205.7
 8 216.2
 9 226.7
 10 237.2
 11 247.7
 12 258.2
 13 268.7
 14 279.2
 15 300.2

U, R, A DISPLAY (VELOCITY AT I max)

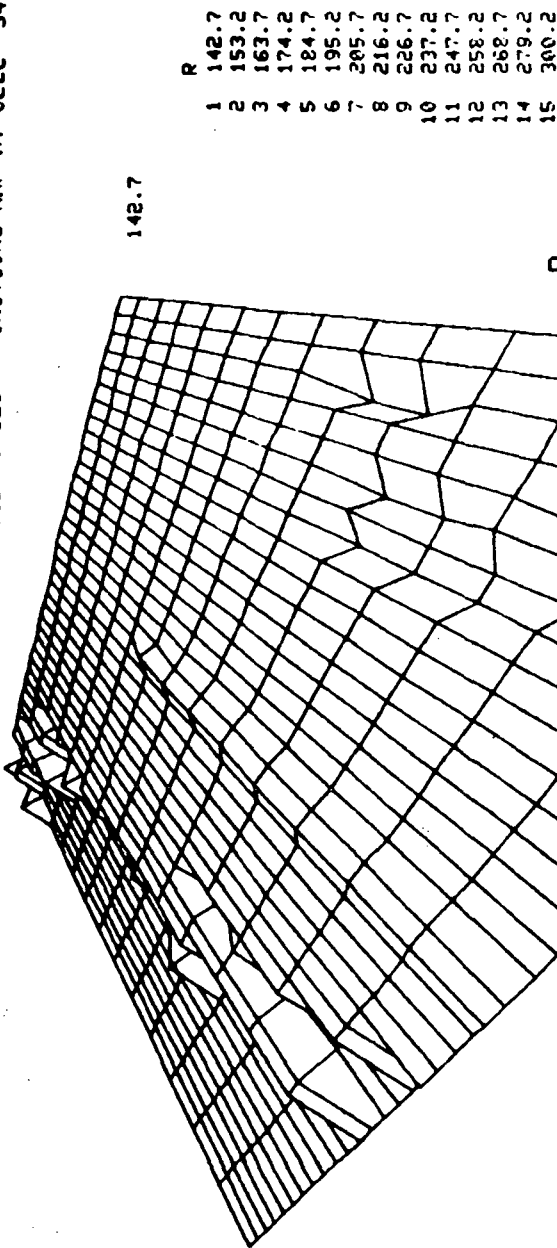
C-3

NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 8 FRAME # 6505 ANGLE 64.552 TO FRAME # 7111 ANGLE 9.326 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 41.0
 AVERAGE U - 21.5

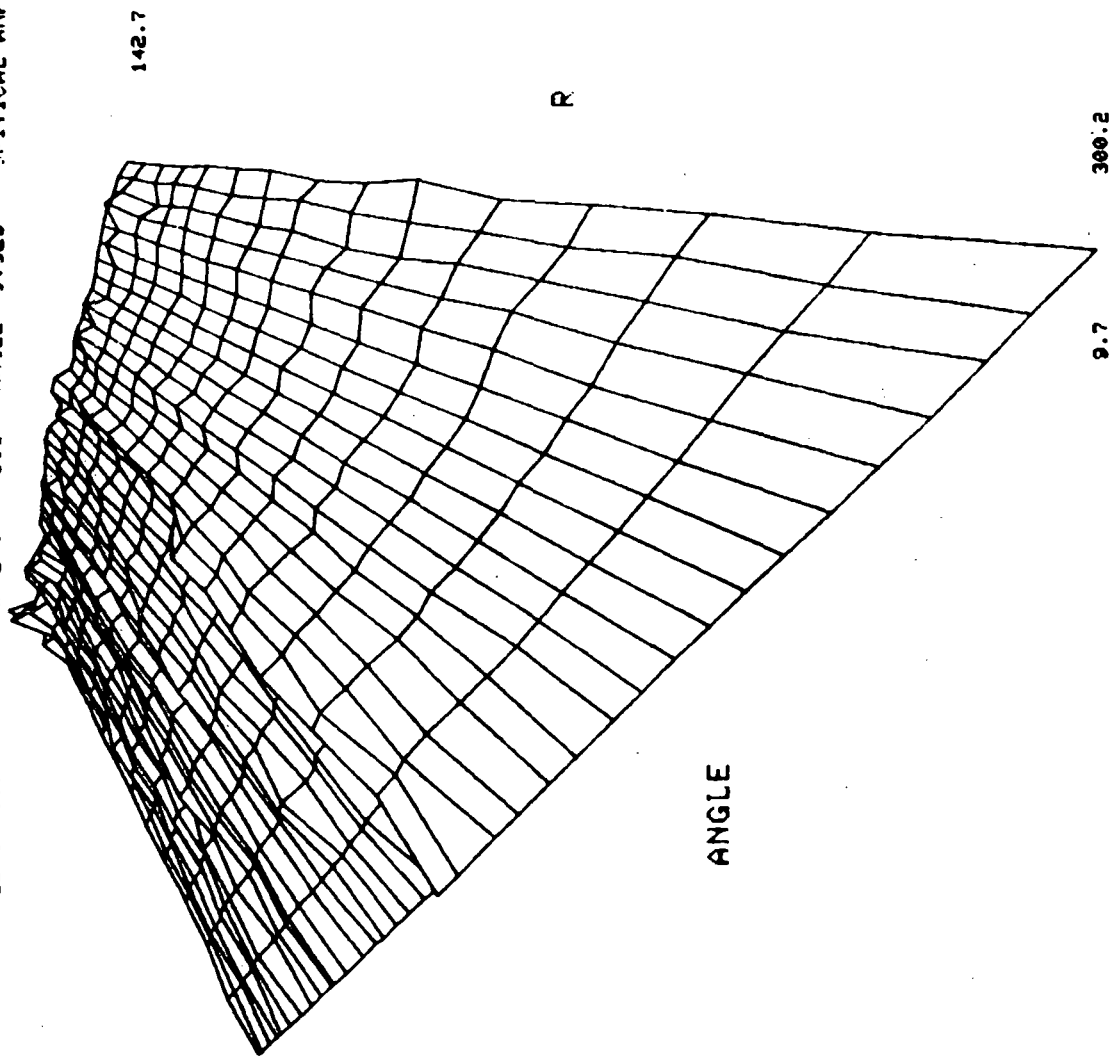
ANGLE
1 63.9
2 63.2
3 62.2
4 61.1
5 59.7
6 58.2
7 56.6
8 55.1
9 53.6
10 52.1
11 50.7
12 49.2
13 47.7
14 46.3
15 44.8
16 43.4
17 41.9
18 40.4
19 39.0
20 37.5
21 36.0
22 34.5
23 33.0
24 31.5
25 30.0
26 28.5
27 27.0
28 25.5
29 24.0
30 22.4
31 20.9
32 19.4
33 17.9
34 16.4
35 14.8
36 13.3
37 11.8
38 10.5
39 9.7



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 8 FRAME # 6505 ANGLE 64.552 TO FRAME # 7111 ANGLE 9.326 CRITICAL AMP AT CELL 34
 OPTION # 31

R
 1 142.7
 2 153.2
 3 163.7
 4 174.2
 5 184.7
 6 195.2
 7 205.7
 8 216.2
 9 226.7
 10 237.2
 11 247.7
 12 258.2
 13 268.7
 14 279.2
 15 309.2



ANGLE
 1 63.9
 2 63.2
 3 62.2
 4 61.1
 5 59.7
 6 58.2
 7 56.6
 8 55.1
 9 53.6
 10 52.1
 11 50.7
 12 49.2
 13 47.7
 14 46.3
 15 44.8
 16 43.4
 17 41.9
 18 40.4
 19 39.0
 20 37.5
 21 36.0
 22 34.5
 23 33.0
 24 31.5
 25 30.0
 26 28.5
 27 27.0
 28 25.5
 29 24.0
 30 22.4
 31 20.9
 32 19.4
 33 17.9
 34 16.4
 35 14.8
 36 13.3
 37 11.8
 38 10.5
 39 9.7

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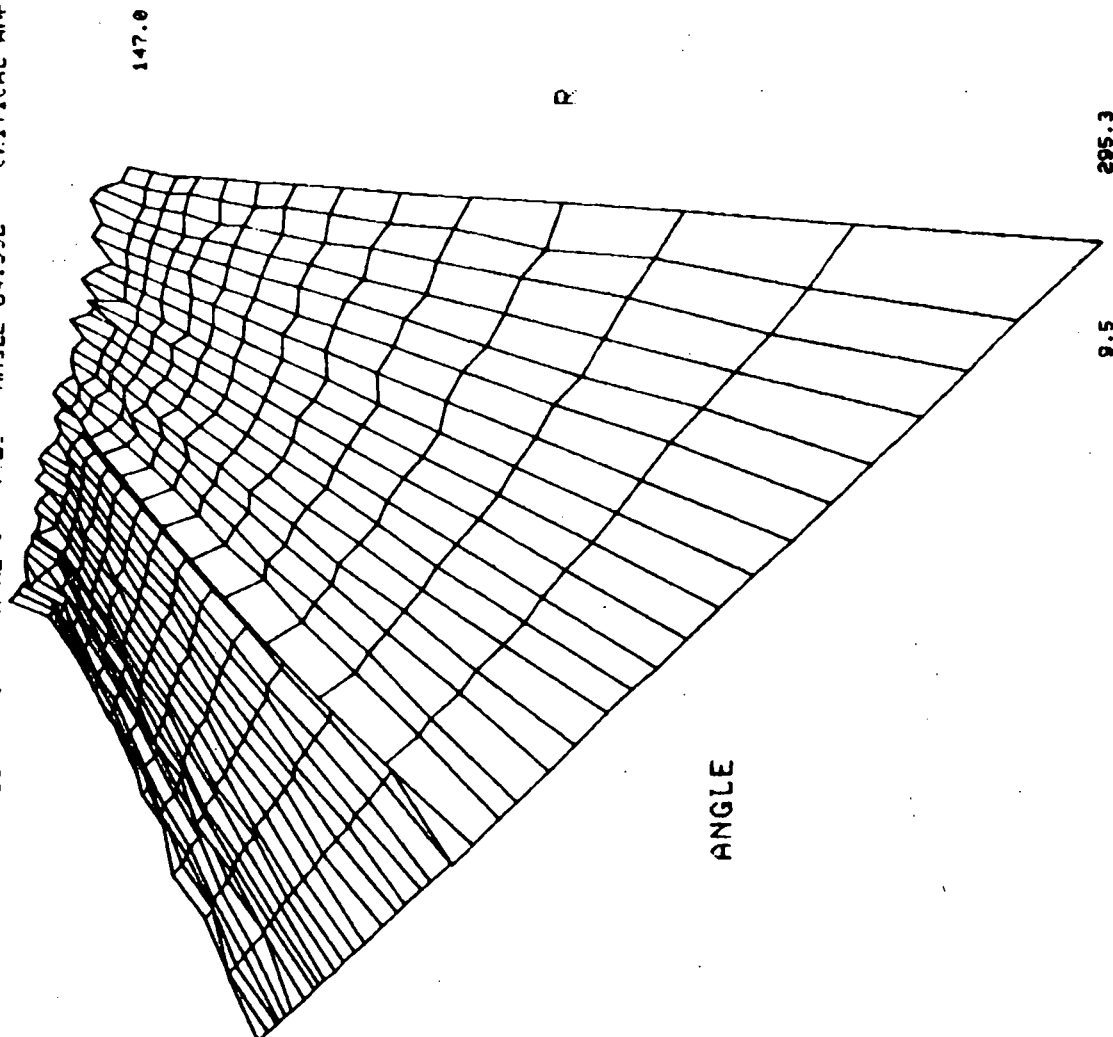
NASA PROJECT DUST DEVIL DAY 255 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 9 FRAME # 7111 ANGLE 9.326 TO FRAME # 7723 ANGLE 64.552 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 171.0

AVERAGE I - 94.4

R
 1 147.0
 2 157.6
 3 168.2
 4 178.8
 5 189.4
 6 200.0
 7 210.6
 8 221.1
 9 231.7
 10 242.3
 11 252.9
 12 263.5
 13 274.1
 14 285.3



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ANGLE
 1 9.5
 2 9.9
 3 10.4
 4 11.2
 5 12.3
 6 13.6
 7 15.0
 8 16.4
 9 18.1
 10 19.5
 11 21.0
 12 22.5
 13 24.0
 14 25.5
 15 26.9
 16 28.4
 17 30.0
 18 31.5
 19 33.0
 20 34.5
 21 35.9
 22 37.4
 23 38.9
 24 40.3
 25 41.9
 26 43.3
 27 44.7
 28 46.1
 29 47.7
 30 49.2
 31 50.6
 32 52.1
 33 53.6
 34 55.1
 35 56.6
 36 58.0
 37 59.5
 38 61.0
 39 62.6
 40 63.9
 41 64.5

I max, R, A DISPLAY

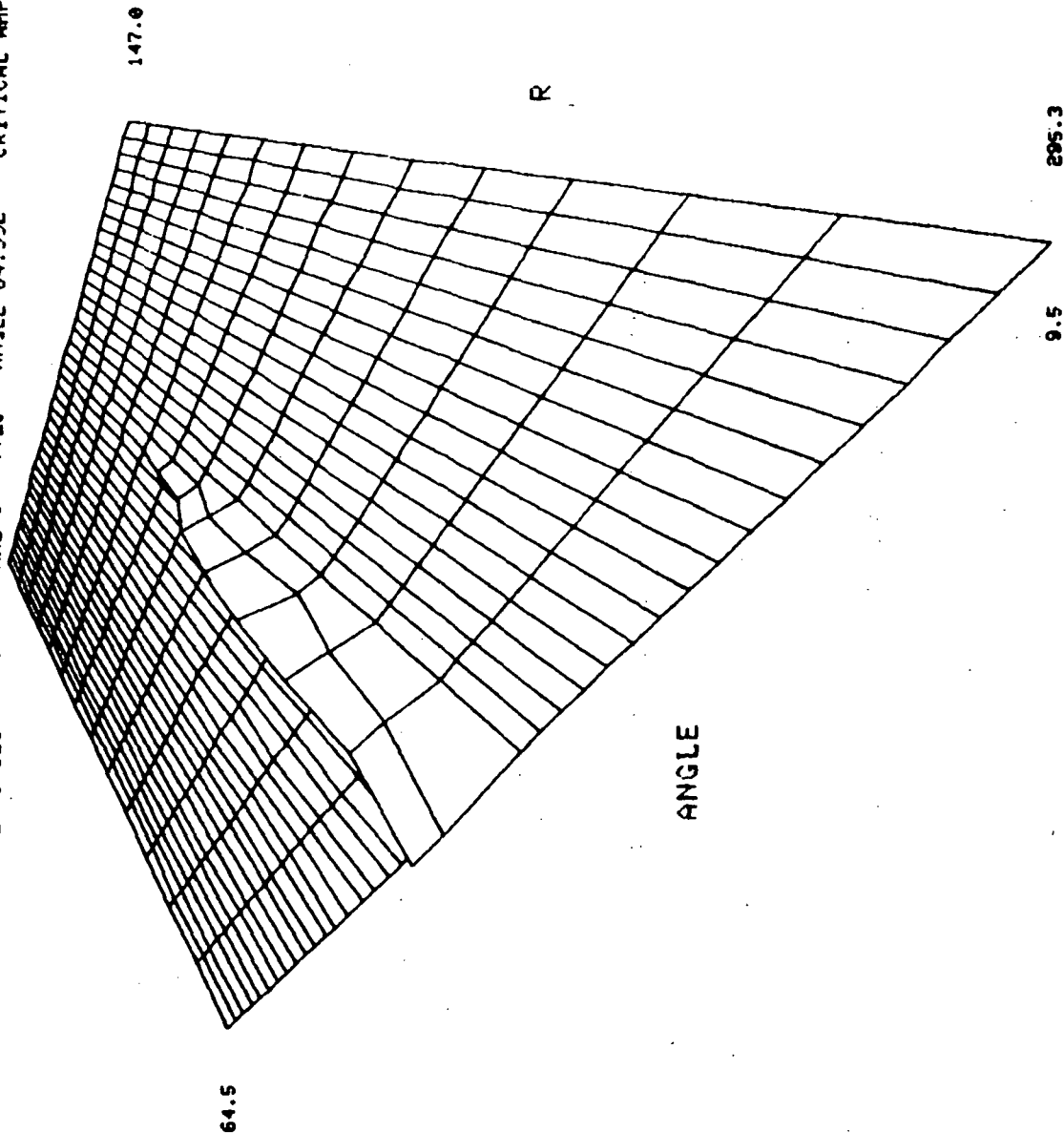
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 9 FRAME # 7111 ANGLE 9.326 TO FRAME # 7729 ANGLE 64.552 CRITICAL MAP AT CELL 34

OPTION # 12

MAXIMUM I - 129.0

AVERAGE I - 3.1

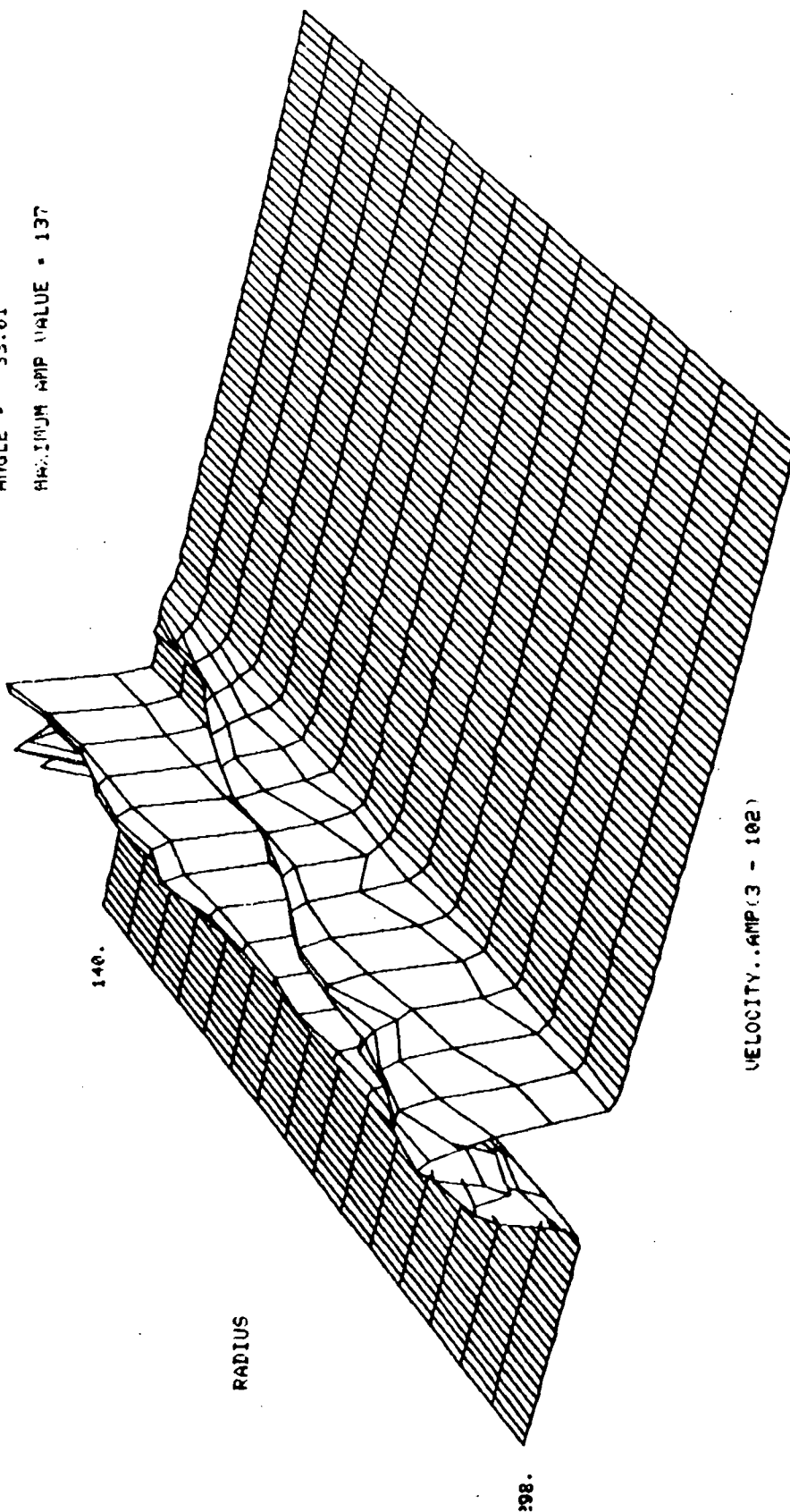
ANGLE
 1 9.5
 2 9.9
 3 10.4
 4 11.2
 5 12.3
 6 13.6
 7 15.0
 8 16.4
 9 18.1
 10 19.5
 11 21.0
 12 22.5
 13 24.0
 14 25.5
 15 26.9
 16 28.4
 17 30.0
 18 31.5
 19 33.0
 20 34.5
 21 35.9
 22 37.4
 23 38.9
 24 40.3
 25 41.9
 26 43.3
 27 44.7
 28 46.1
 29 47.7
 30 49.2
 31 50.6
 32 52.1
 33 53.6
 34 55.1
 35 56.6
 36 58.0
 37 59.5
 38 61.0
 39 62.6
 40 63.9
 41 64.5



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I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20852
 SCAN # 9 FRAME # 7111 ANGLE 9.326 TO FRAME # 7729 ANGLE 64.552 CRITICAL AMP AT CELL 34
 FRAME # 7380 TO 7396
 ANGLE = 33.01
 MAXIMUM AMP VALUE = 137



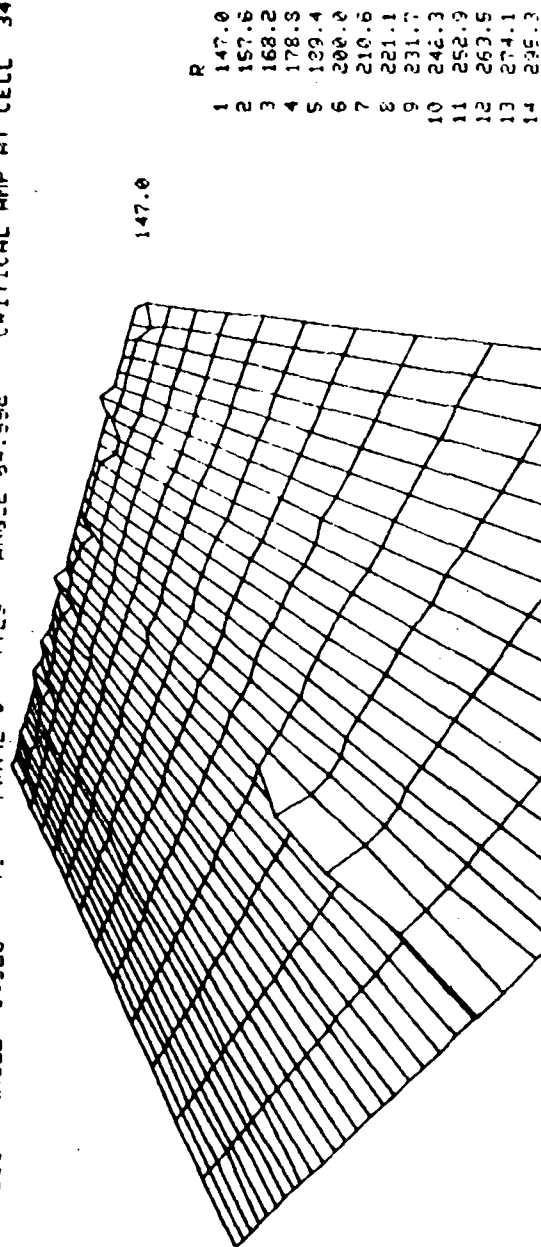
NASH PROJECT DUST DEVI. DAY 236 RUN # 17 TYPE 1 OF 2-20339
 * SCAN # 9 FRAME # 7111 ANGLE 9.326 TO FRAME # 7729 ANGLE 54.552 CRITICAL MIP AT CELL 34

OPTION # 21

MAXIMUM U = 36.0

AVERAGE U = 27.4

ANGLE
 1 9.5
 2 9.9
 3 10.4
 4 11.2
 5 12.3
 6 13.6
 7 15.0
 8 16.4
 9 18.1
 10 19.5
 11 21.0
 12 22.5
 13 24.0
 14 25.5
 15 26.9
 16 28.4
 17 30.0
 18 31.5
 19 33.0
 20 34.5
 21 35.9
 22 37.4
 23 38.9
 24 40.3
 25 41.9
 26 43.3
 27 44.7
 28 46.1
 29 47.7
 30 49.2
 31 50.6
 32 52.1
 33 53.6
 34 55.1
 35 56.6
 36 58.0
 37 59.5
 38 61.0
 39 62.6
 40 63.9
 41 64.5



R

ANGLE

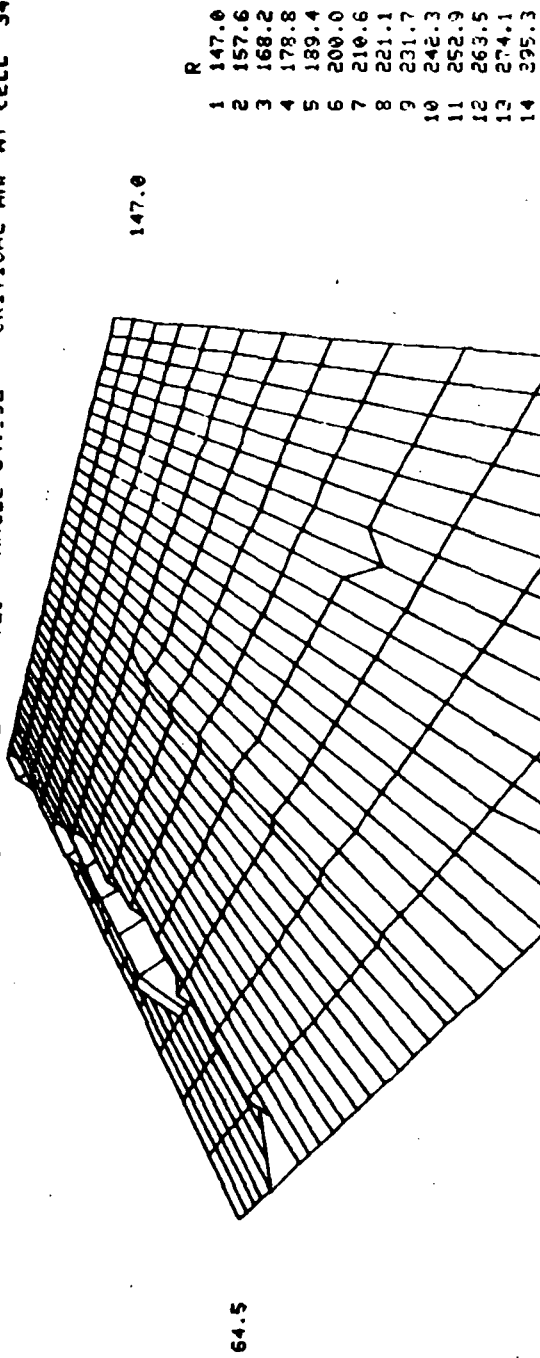
U, R, A DISPLAY (VELOCITY AT I MAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 9 FRAME # 7111 ANGLE 9.326 TO FRAME # 7723 ANGLE 64.552 CRITICAL AMP AT CELL 34

OPTION # 22

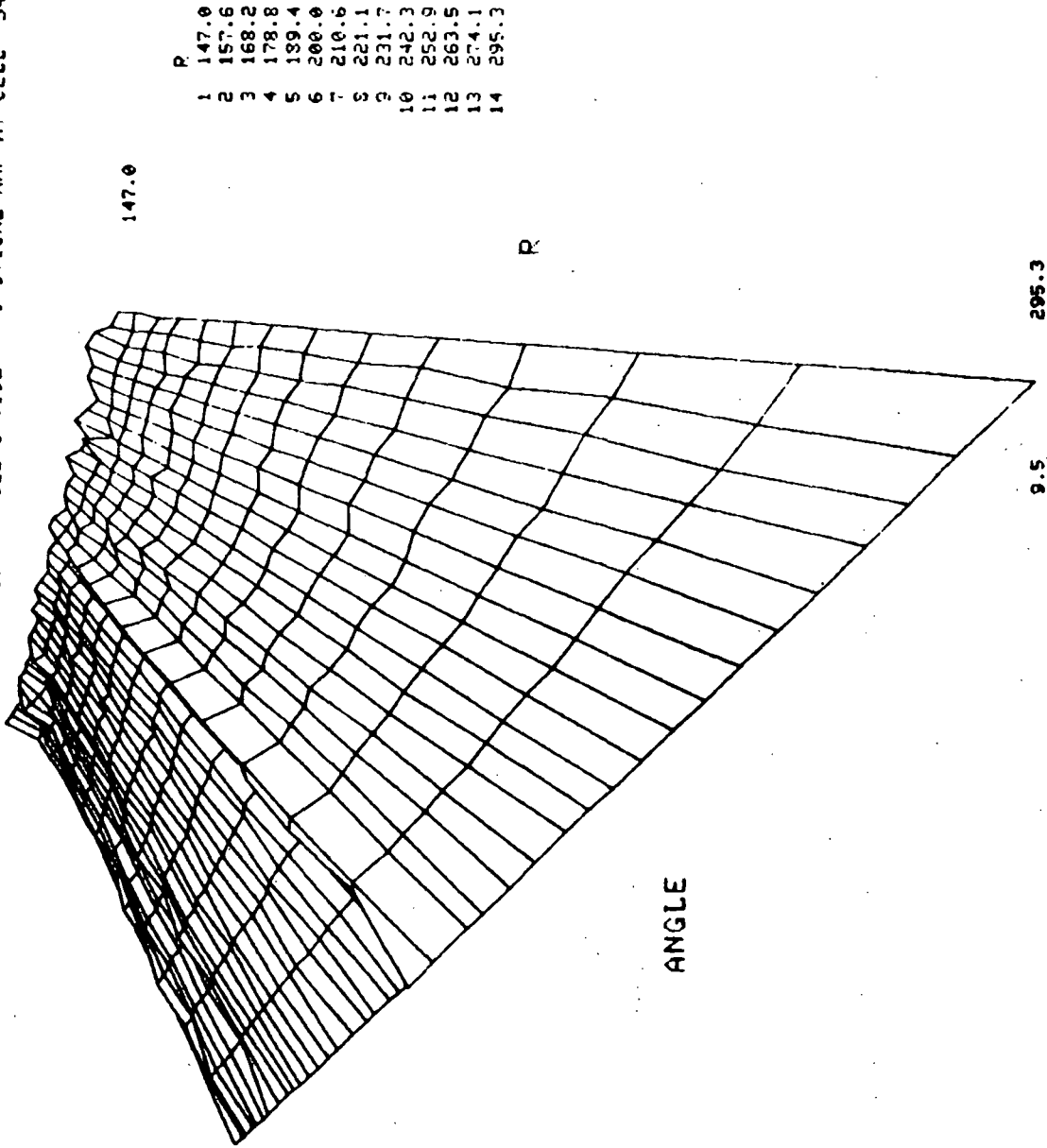
MAXIMUM U - 37.0
 AVERAGE U - 24.6

- ANGLE
- 1 9.5
- 2 9.9
- 3 10.4
- 4 11.2
- 5 12.3
- 6 13.6
- 7 15.0
- 8 16.4
- 9 18.1
- 10 19.5
- 11 21.0
- 12 22.5
- 13 24.0
- 14 25.5
- 15 26.9
- 16 28.4
- 17 30.0
- 18 31.5
- 19 33.0
- 20 34.5
- 21 35.9
- 22 37.4
- 23 38.9
- 24 40.3
- 25 41.9
- 26 43.3
- 27 44.7
- 28 46.1
- 29 47.7
- 30 49.2
- 31 50.6
- 32 52.1
- 33 53.6
- 34 55.1
- 35 56.6
- 36 58.0
- 37 59.5
- 38 61.0
- 39 62.6
- 40 63.9
- 41 64.5



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVI. DAY 206 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 9 FRAME # 7111 ANGLE 9.326 TO FRAME # 7729 ANGLE 64.552 OPTICAL AMP AT CELL 34
 OPTION # 31



R
 1 147.0
 2 157.6
 3 168.2
 4 178.8
 5 189.4
 6 200.0
 7 210.6
 8 221.1
 9 231.7
 10 242.3
 11 252.9
 12 263.5
 13 274.1
 14 295.3

ANGLE
 1 9.5
 2 9.9
 3 10.4
 4 11.2
 5 12.3
 6 13.6
 7 15.0
 8 16.4
 9 18.1
 10 19.5
 11 21.0
 12 22.5
 13 24.0
 14 25.5
 15 26.9
 16 28.4
 17 30.0
 18 31.5
 19 33.0
 20 34.5
 21 35.9
 22 37.4
 23 38.9
 24 40.3
 25 41.9
 26 43.3
 27 44.7
 28 46.1
 29 47.7
 30 49.2
 31 50.6
 32 52.1
 33 53.6
 34 55.1
 35 56.6
 36 58.0
 37 59.5
 38 61.0
 39 62.6
 40 63.9
 41 64.5

U * IMAX, R, A DISPLAY

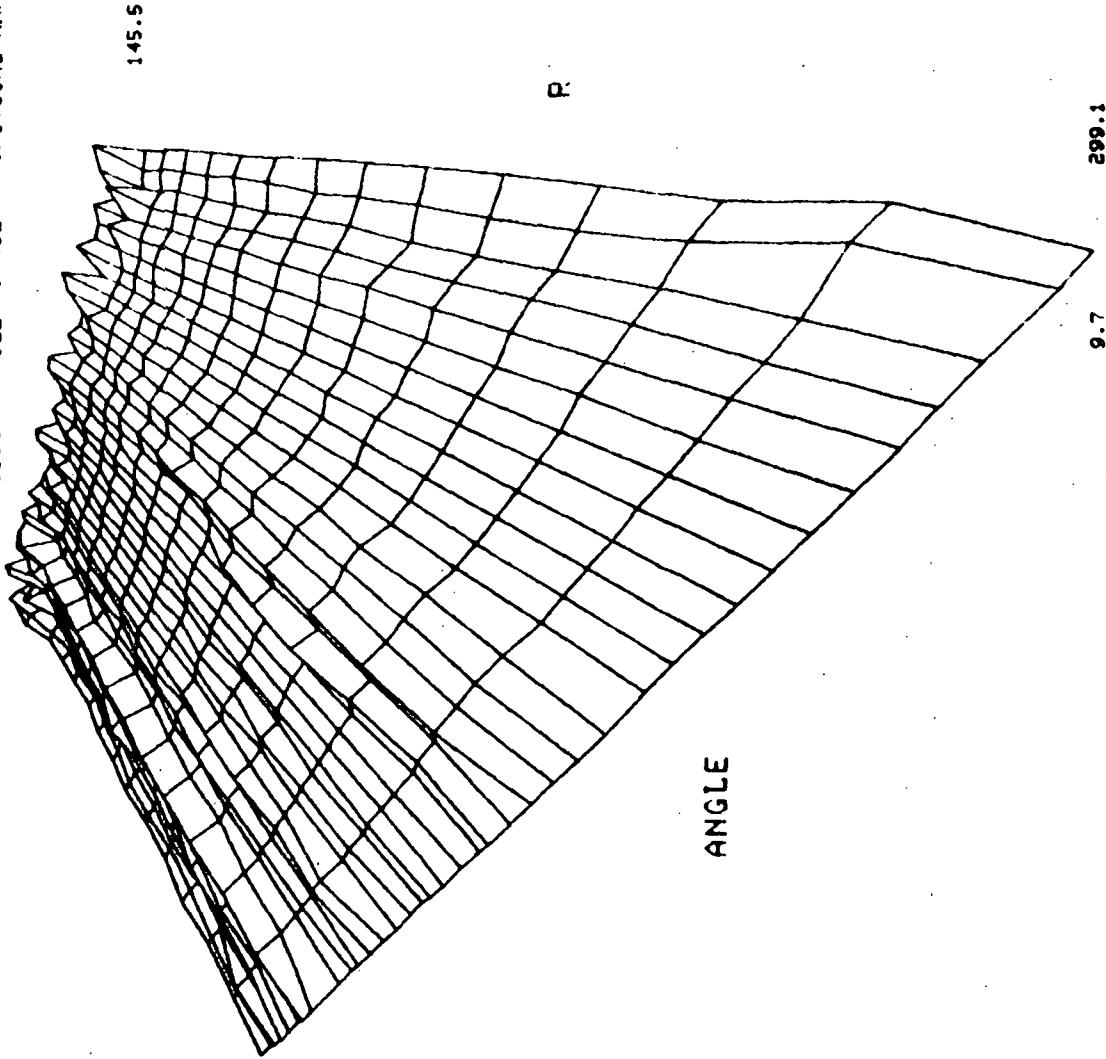
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20829
SCAN # 10 FRAME # 7729 ANGLE 64.552 TO FRAME # 9358 ANGLE 9.452 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 170.0

AVERAGE I - 91.9

R
1 145.5
2 155.7
3 166.0
4 176.2
5 186.4
6 196.7
7 206.9
8 217.2
9 227.4
10 237.6
11 247.9
12 258.1
13 268.4
14 278.6
15 289.1



ANGLE
1 64.4
2 64.2
3 63.6
4 62.7
5 61.6
6 60.3
7 58.8
8 57.3
9 55.8
10 54.2
11 52.8
12 51.3
13 49.9
14 48.4
15 47.0
16 45.5
17 44.0
18 42.6
19 41.2
20 39.7
21 38.1
22 36.7
23 35.1
24 33.6
25 32.2
26 30.7
27 29.1
28 27.7
29 26.2
30 24.7
31 23.1
32 21.6
33 20.2
34 18.6
35 17.1
36 15.5
37 14.0
38 12.5
39 11.1
40 9.9
41 9.7

IMAX, R, A DISPLAY

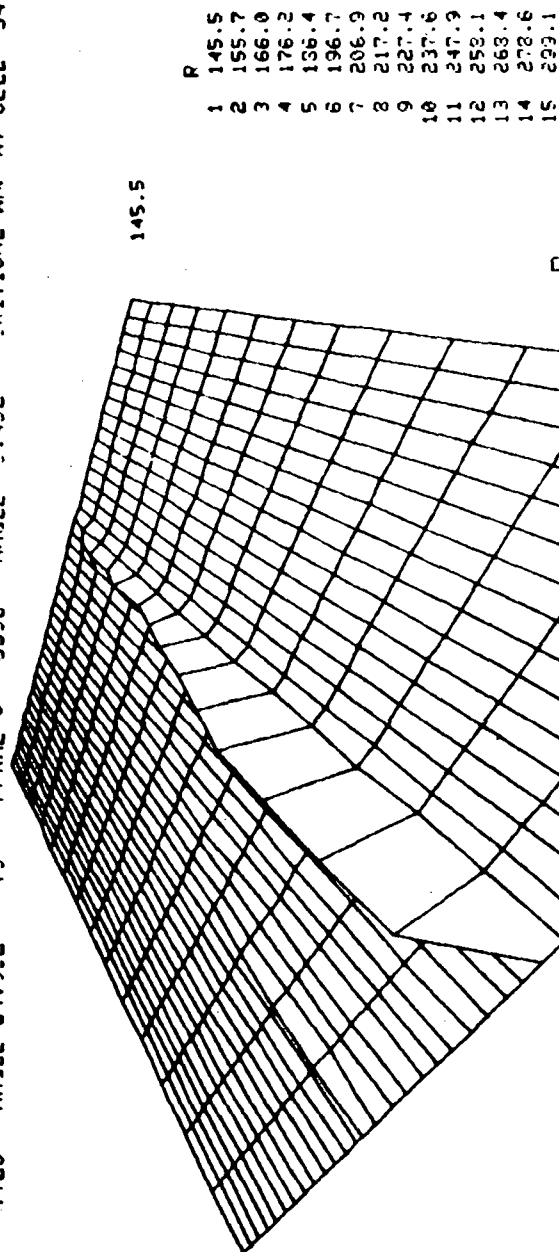
NASA PROJECT DUST DEVIL DAY 238 RUN # 17 TAPE 1 OF 2-20383
 SCAN # 10 FRAME # 7729 ANGLE 64.552 TO FRAME # 9358 ANGLE 2.452 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 111.0

AVERAGE I - 2.6

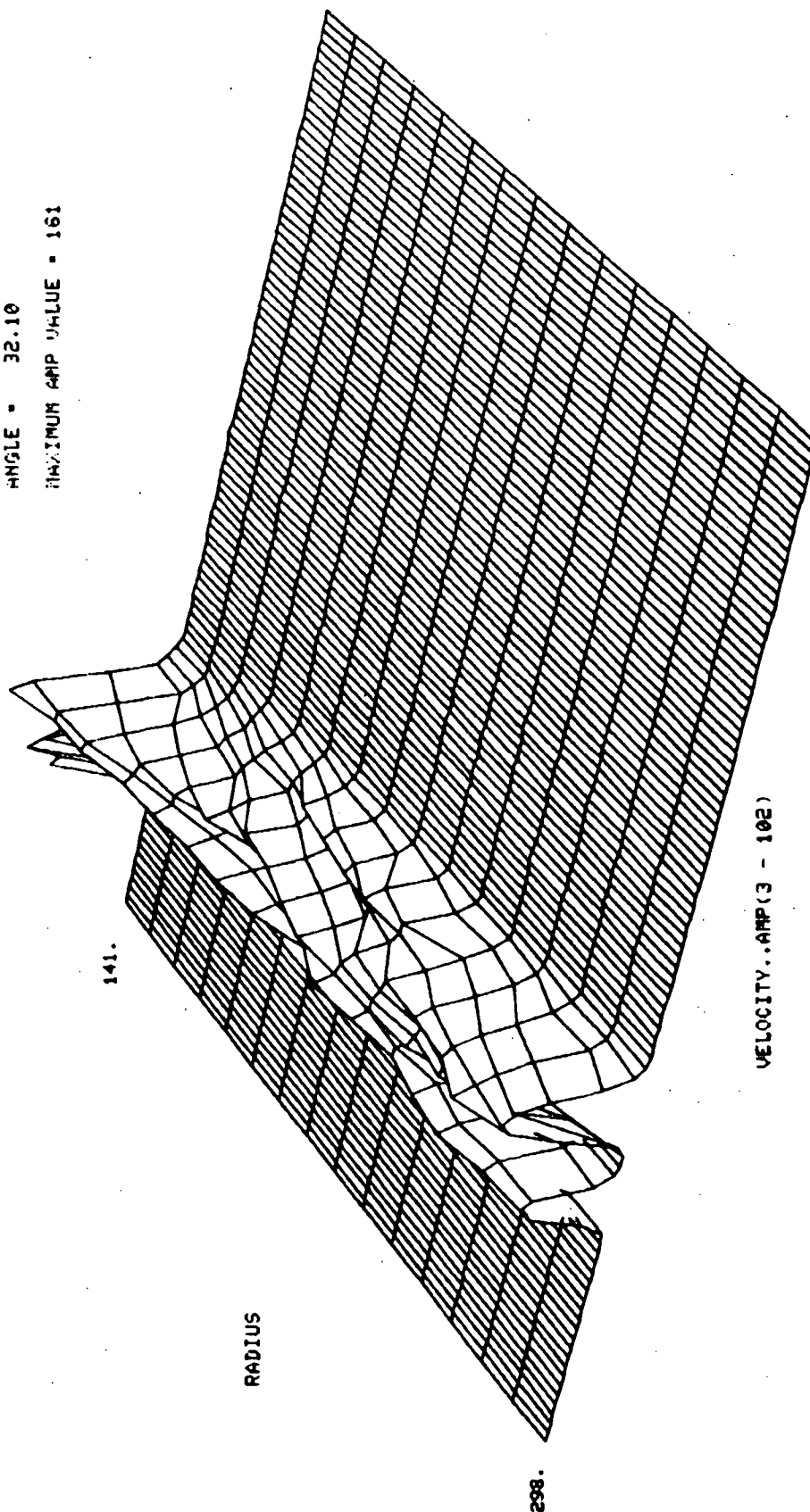
ANGLE
1 64.4
2 64.2
3 63.6
4 62.7
5 61.6
6 60.3
7 58.8
8 57.3
9 55.8
10 54.2
11 52.8
12 51.3
13 49.9
14 48.4
15 47.0
16 45.5
17 44.0
18 42.6
19 41.2
20 39.7
21 38.1
22 36.7
23 35.1
24 33.6
25 32.2
26 30.7
27 29.1
28 27.7
29 26.2
30 24.7
31 23.1
32 21.6
33 20.2
34 18.6
35 17.1
36 15.5
37 14.0
38 12.5
39 11.1
40 9.9
41 9.7



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I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
SCAN # 10 FRAME # 7729 ANGLE 64.552 TO FRAME # 3358 ANGLE 9.452 CRITICAL AMP AT CELL 34
FRAME # 3100 TO 8116
ANGLE = 32.10
MAXIMUM AMP VALUE = 161



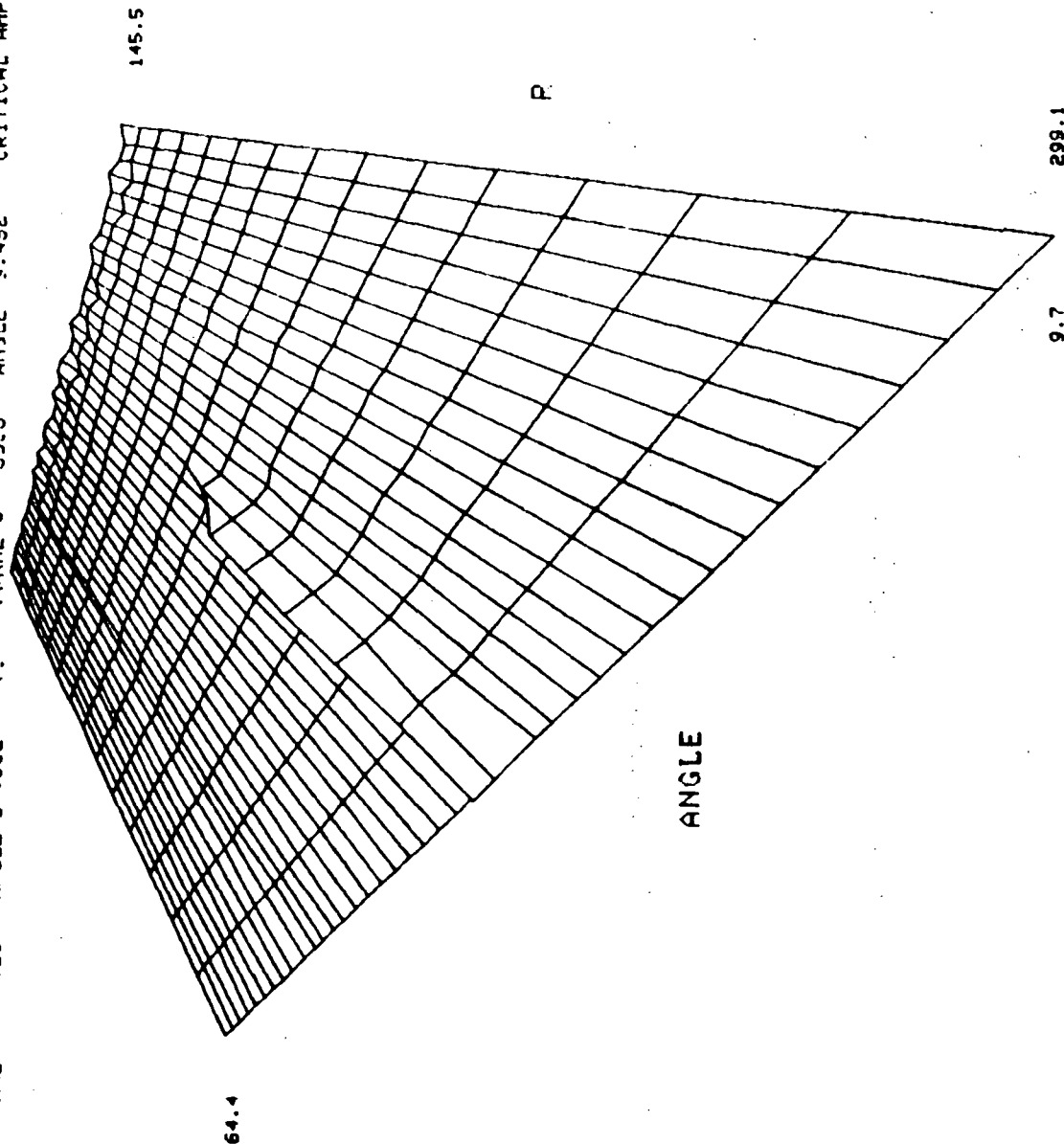
NASA PROJECT DUST DEVIL DAY 236 RUN 117 TARE 1 OF 2-20889
 SCAN # 10 FRAME # 7729 ANGLE 64.552 TO FRAME # 8350 ANGLE 9.452 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 40.0

AVERAGE U - 27.3

ANGLE
1 64.4
2 64.2
3 63.6
4 62.7
5 61.6
6 60.3
7 58.8
8 57.3
9 55.8
10 54.2
11 52.8
12 51.3
13 49.9
14 48.4
15 47.0
16 45.5
17 44.0
18 42.6
19 41.2
20 39.7
21 38.1
22 36.7
23 35.1
24 33.6
25 32.2
26 30.7
27 29.1
28 27.7
29 26.2
30 24.7
31 23.1
32 21.6
33 20.2
34 18.6
35 17.1
36 15.5
37 14.0
38 12.5
39 11.1
40 9.9
41 9.7



R
1 145.5
2 155.7
3 166.0
4 176.2
5 186.4
6 196.7
7 206.9
8 217.2
9 227.4
10 237.6
11 247.9
12 258.1
13 268.4
14 278.6
15 289.1

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U, R, A DISPLAY (VELOCITY AT I MAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
SCAN # 10 FRAME # 7729 ANGLE 64.552 TO FRAME # 2358 ANGLE 9.452 CRITICAL AMP AT CELL 34

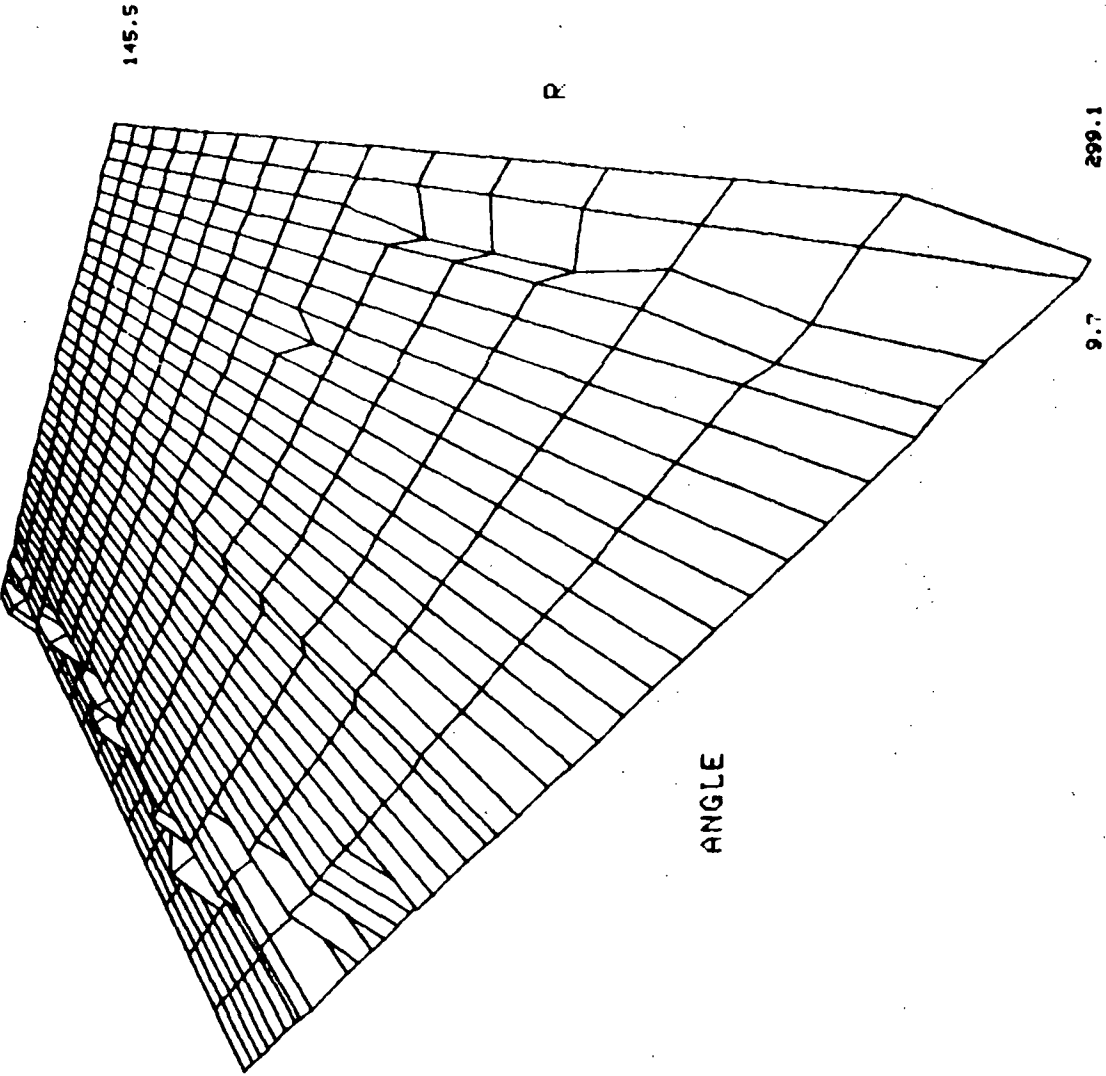
OPTION # 22

MAXIMUM U - 41.0

AVERAGE U - 23.6

ANGLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
	64.4	64.2	63.6	62.7	61.6	60.3	58.8	57.3	55.8	54.2	52.8	51.3	49.9	48.4	47.0	45.5	44.0	42.6	41.2	39.7	38.1	36.7	35.1	33.6	32.2	30.7	29.1	27.7	26.2	24.7	23.1	21.6	20.2	18.6	17.1	15.5	14.0	12.5	11.1	9.9	9.7

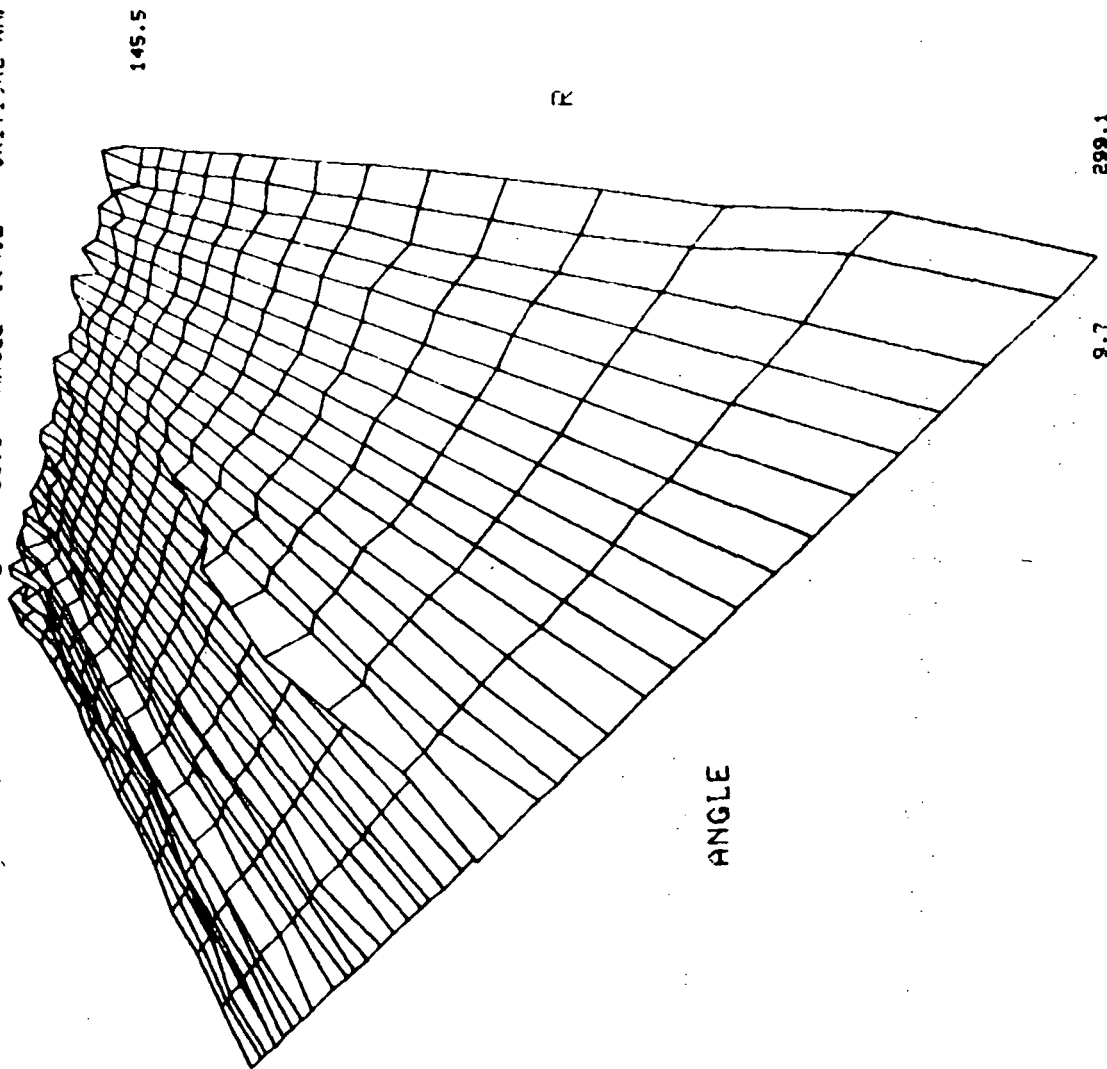
R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	145.5	155.7	166.0	176.2	186.4	196.7	206.9	217.2	227.4	237.6	247.9	258.1	268.4	278.6	289.1



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U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I - 70

NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20823
 SCAN # 10 FRAME # 7729 ANGLE 64.552 TO FRAME # 5353 ANGLE 9.452 CRITICAL AMP AT CELL 34
 OPTION # 31



ANGLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
	64.4	64.2	63.6	62.7	61.6	60.3	58.8	57.3	55.8	54.2	52.8	51.3	49.9	48.4	47.0	45.5	44.0	42.6	41.2	39.7	38.1	36.7	35.1	33.6	32.2	30.7	29.1	27.7	26.2	24.7	23.1	21.6	20.2	18.6	17.1	15.5	14.0	12.5	11.1	9.7	

P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	145.5	155.7	166.0	176.2	186.4	196.7	206.3	217.2	227.4	237.6	247.9	258.1	268.4	278.6	288.1

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U * Imax, R, A DISPLAY

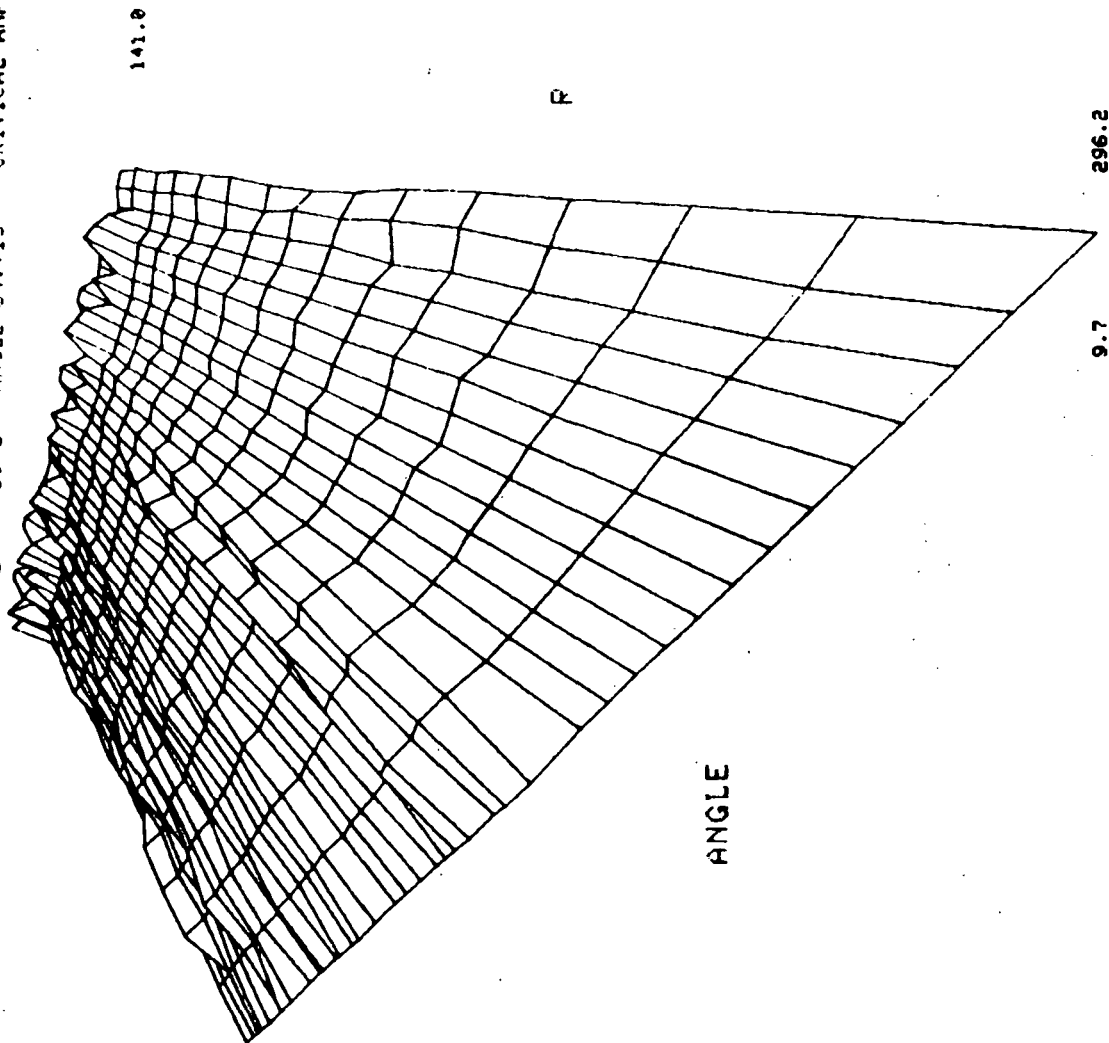
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20829
 SCAN # 11 FRAME # 8358 ANGLE 9.452 TO FRAME # 2973 ANGLE 64.713 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 173.0

AVERAGE I - 85.2

ANGLE
 1 9.7
 2 10.1
 3 10.8
 4 11.8
 5 13.0
 6 14.3
 7 15.8
 8 17.4
 9 18.8
 10 20.3
 11 21.8
 12 23.3
 13 24.7
 14 26.3
 15 27.8
 16 29.3
 17 30.8
 18 32.3
 19 33.8
 20 35.3
 21 36.7
 22 38.2
 23 39.7
 24 41.2
 25 42.6
 26 44.1
 27 45.5
 28 47.0
 29 48.5
 30 49.9
 31 51.5
 32 52.9
 33 54.3
 34 55.8
 35 57.3
 36 58.8
 37 60.4
 38 61.9
 39 63.3
 40 64.2



P
 1 141.0
 2 151.3
 3 161.7
 4 172.0
 5 182.4
 6 192.7
 7 203.1
 8 213.4
 9 223.7
 10 234.1
 11 244.4
 12 254.8
 13 265.1
 14 275.5
 15 296.2

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Imax, R, A DISPLAY

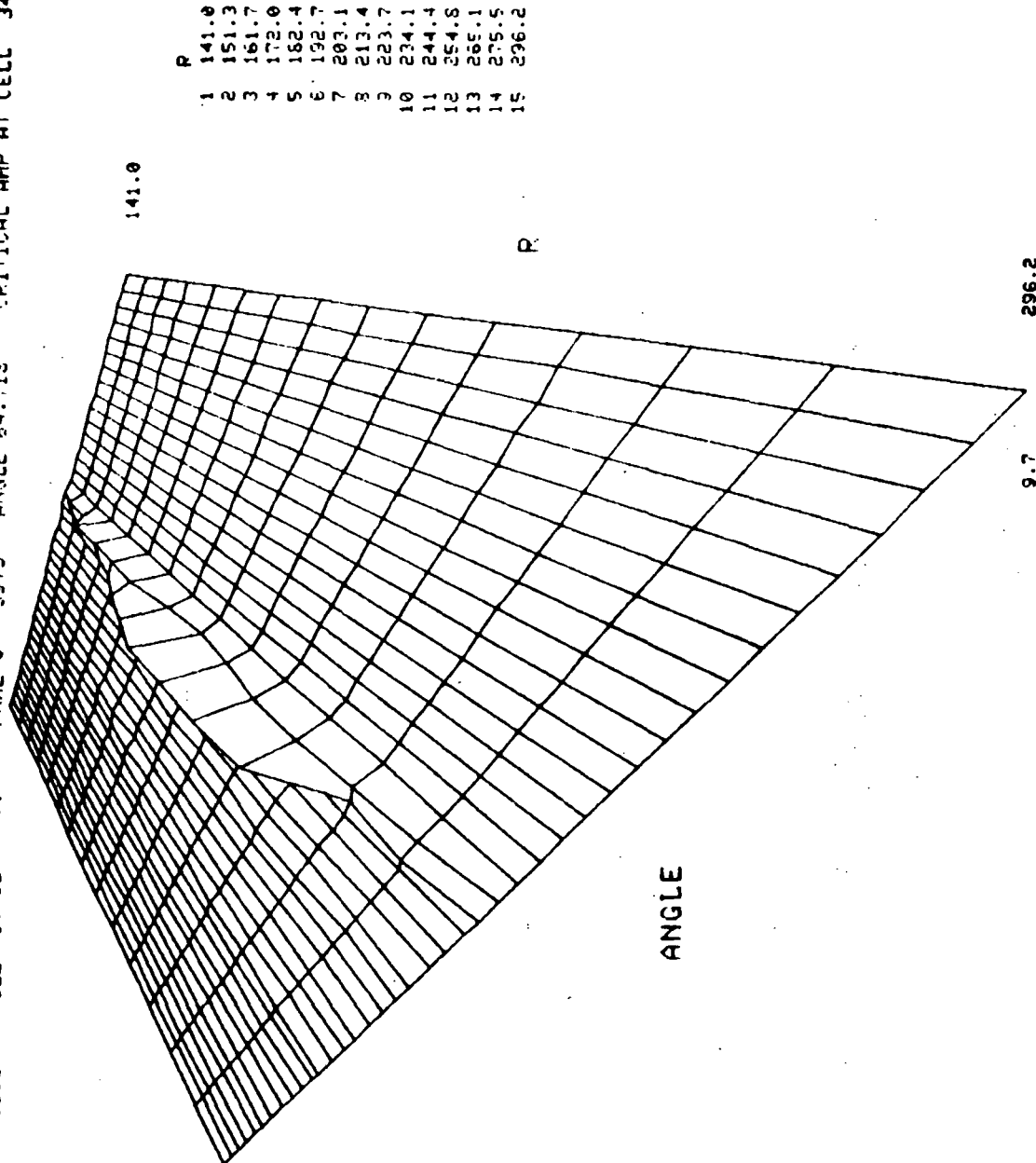
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 T-REF 1 OF 2-20883
 * SCAN # 11 FRAME # 8353 ANGLE 9.452 TO FRAME # 8973 ANGLE 54.716 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 68.0

AVERAGE I - 2.1

ANGLE	
1	9.7
2	10.1
3	10.8
4	11.8
5	13.0
6	14.3
7	15.8
8	17.4
9	18.8
10	20.3
11	21.8
12	23.3
13	24.7
14	26.3
15	27.8
16	29.3
17	30.8
18	32.3
19	33.8
20	35.3
21	36.7
22	38.2
23	39.7
24	41.2
25	42.6
26	44.1
27	45.5
28	47.0
29	48.5
30	49.9
31	51.5
32	52.9
33	54.3
34	55.8
35	57.3
36	58.8
37	60.4
38	61.9
39	63.3
40	64.2

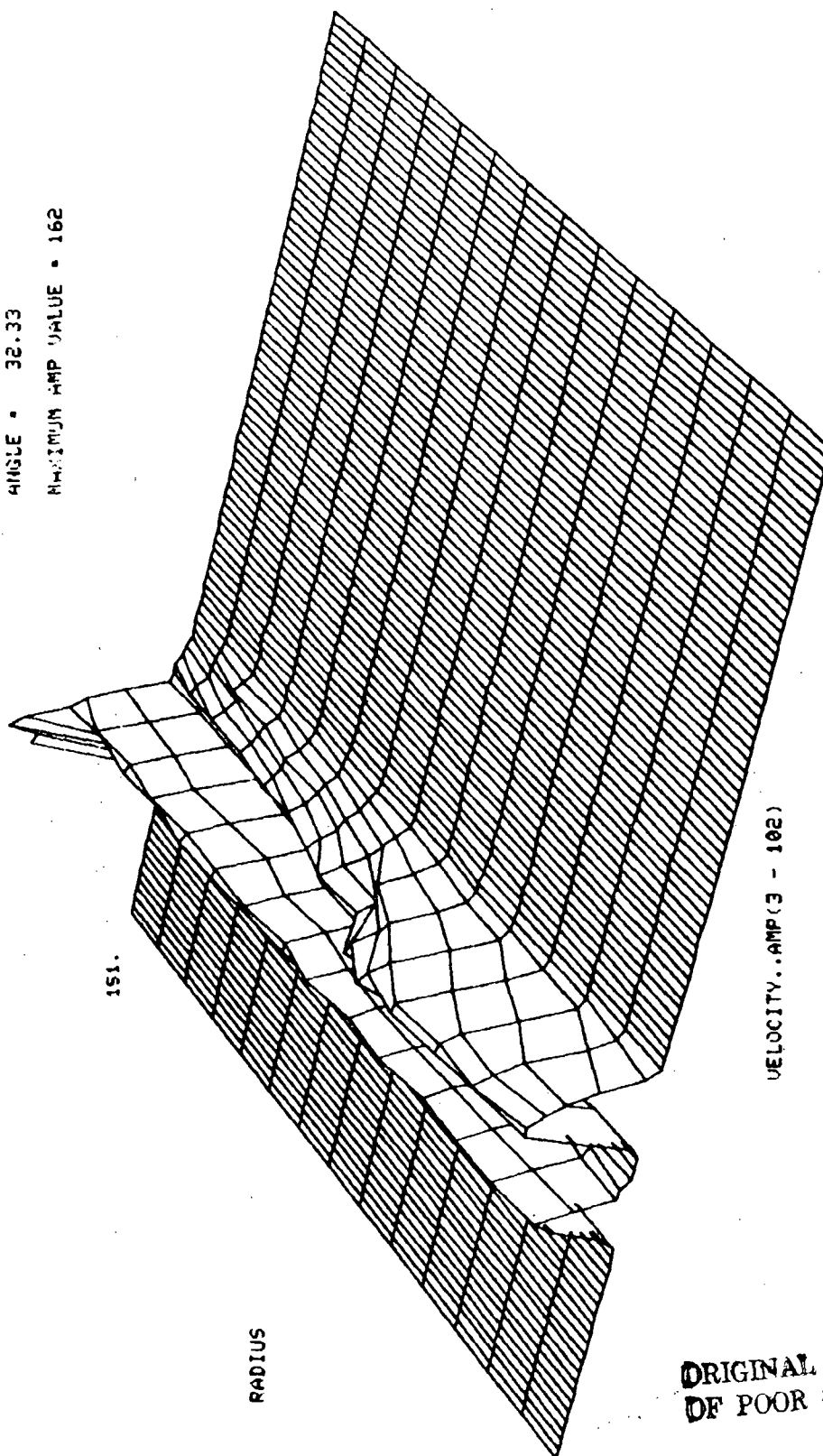


R	
1	141.0
2	151.3
3	161.7
4	172.0
5	182.4
6	192.7
7	203.1
8	213.4
9	223.7
10	234.1
11	244.4
12	254.8
13	265.1
14	275.5
15	286.2

I, R, A DISPLAY AT VELOCITY CELL 34

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NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 11 FRAME # 8358 ANGLE 9.452 TO FRAME # 8373 ANGLE 64.718 CRITICAL AMP AT CELL 34
 FRAME # 8617 TO 8632
 ANGLE # 32.33
 MAXIMUM AMP VALUE # 162

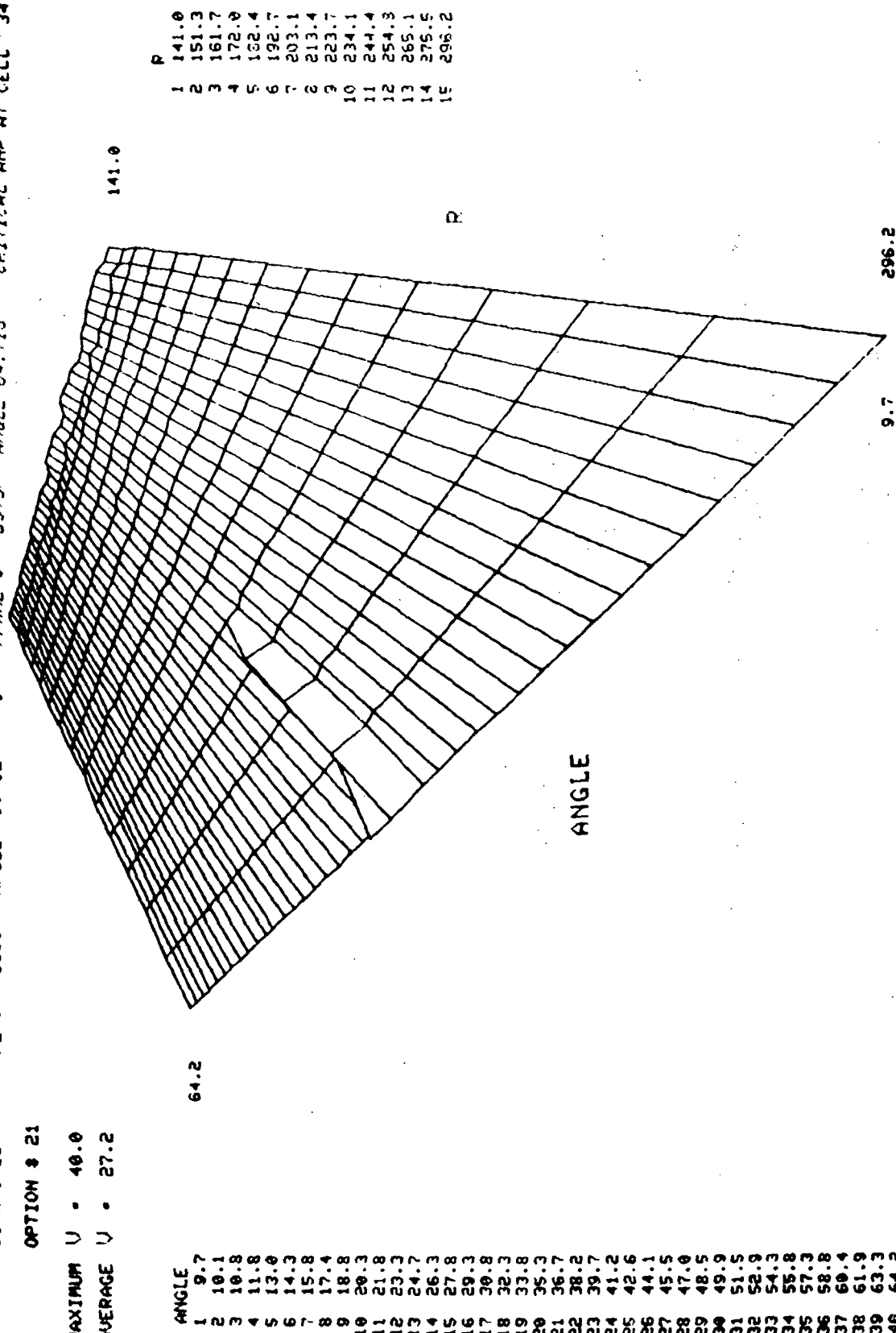


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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 * SCAN # 11 FRAME # 8358 ANGLE 9.452 TO FRAME # 3973 ANGLE 64.713 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U = 40.0
 AVERAGE U = 27.2



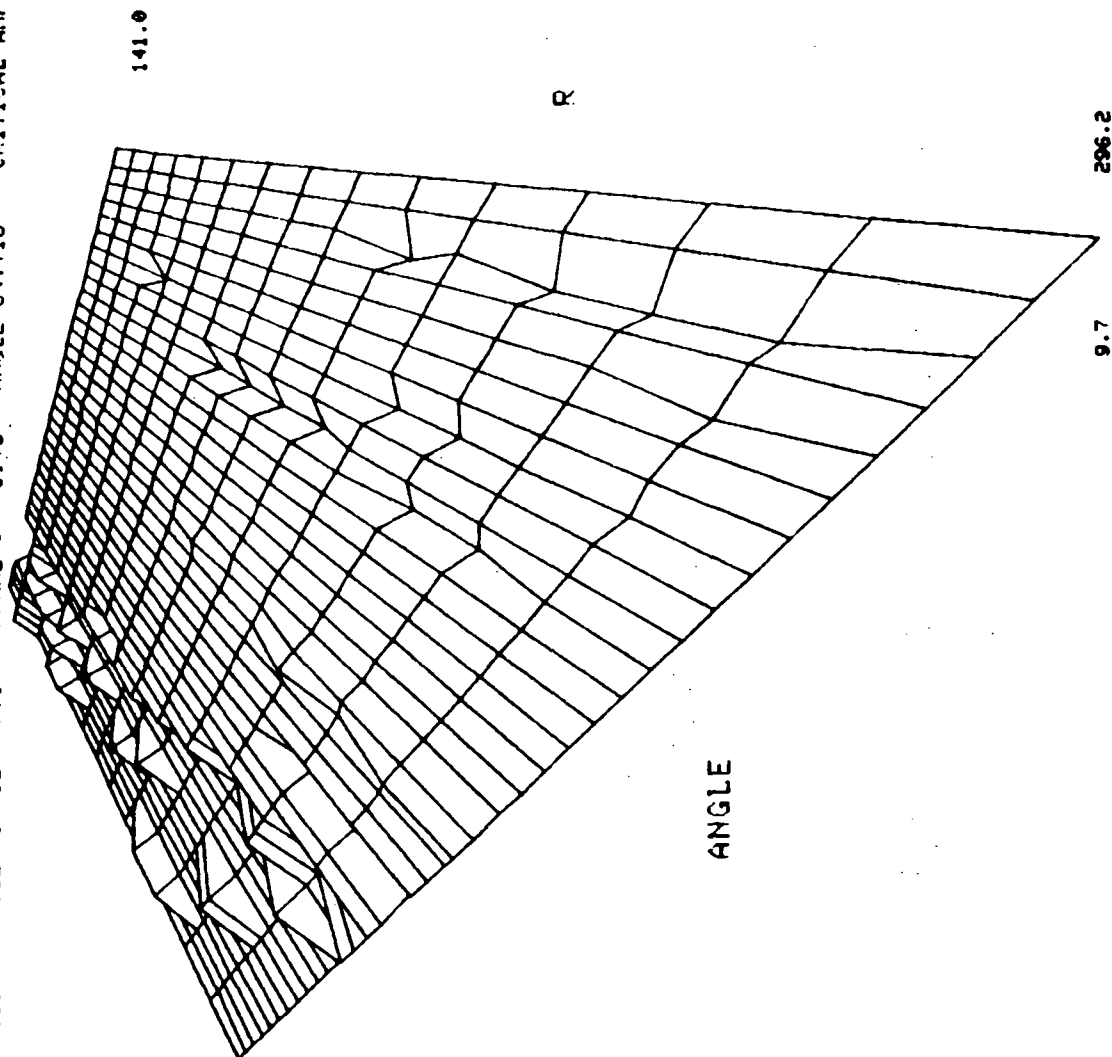
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 11 FRAME # 8358 ANGLE 9.452 TO FRAME # 8973 ANGLE 64.718 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 43.0

AVERAGE U - 21.2

R
 1 141.0
 2 151.3
 3 161.7
 4 172.0
 5 182.4
 6 192.7
 7 203.1
 8 213.4
 9 223.7
 10 234.1
 11 244.4
 12 254.8
 13 265.1
 14 275.5
 15 286.2



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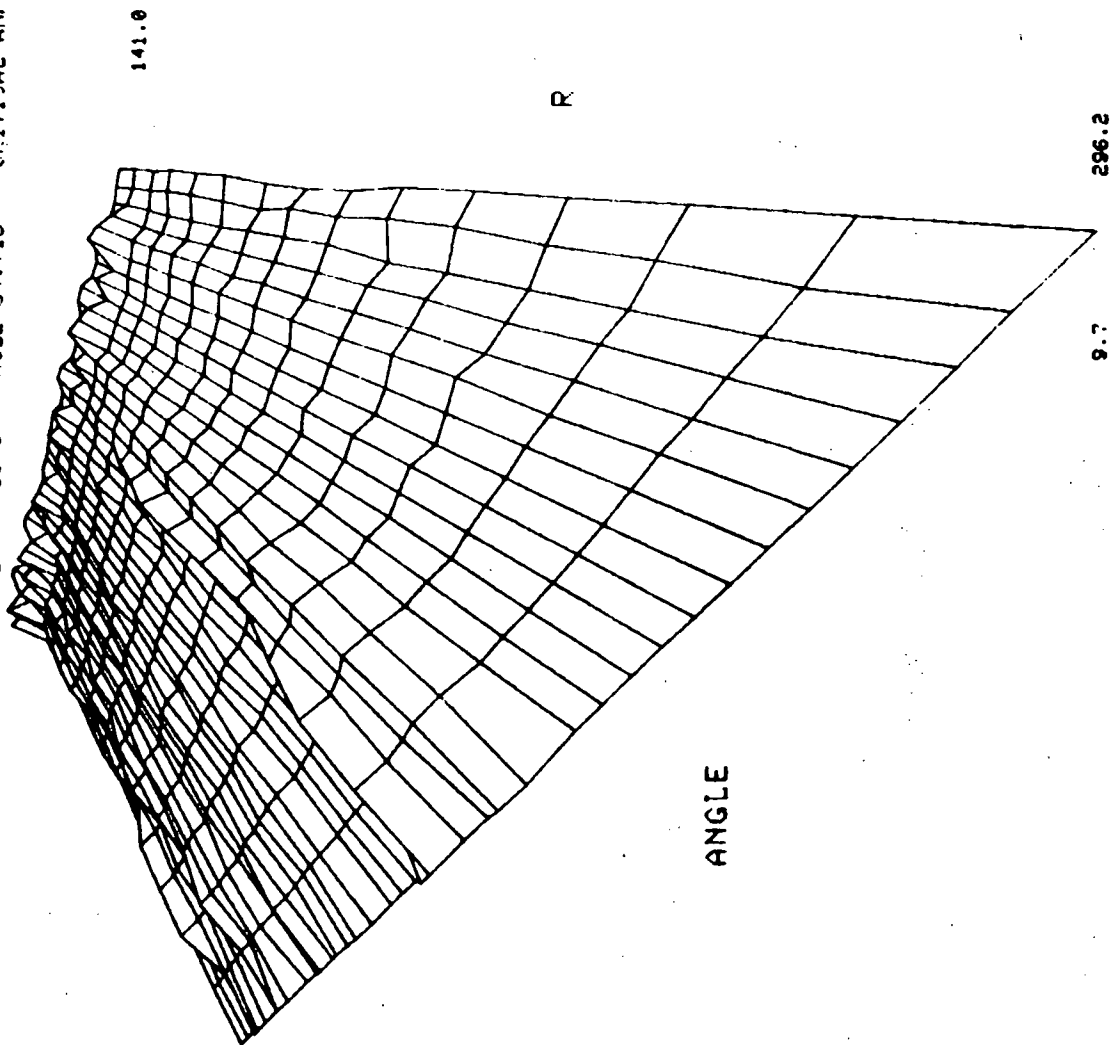
ANGLE
 1 9.7
 2 10.1
 3 10.8
 4 11.8
 5 13.0
 6 14.3
 7 15.8
 8 17.4
 9 18.8
 10 20.3
 11 21.8
 12 23.3
 13 24.7
 14 26.3
 15 27.8
 16 29.3
 17 30.8
 18 32.3
 19 33.8
 20 35.3
 21 36.7
 22 38.2
 23 39.7
 24 41.2
 25 42.6
 26 44.1
 27 45.5
 28 47.0
 29 48.5
 30 49.9
 31 51.5
 32 52.9
 33 54.3
 34 55.8
 35 57.3
 36 58.8
 37 60.4
 38 61.9
 39 63.3
 40 64.2

U_{max}, R, A DISPLAY AMPLITUDE THRESHOLD AT I - 70

NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 11 FRAME # 8358 ANGLE 9.452 TO FRAME # 8973 ANGLE 64.718 CRITICAL AMP AT CELL 34
 OPTION # 31

ANGLE
 1 9.7
 2 10.1
 3 10.8
 4 11.8
 5 13.0
 6 14.3
 7 15.8
 8 17.4
 9 18.8
 10 20.3
 11 21.8
 12 23.3
 13 24.7
 14 26.3
 15 27.8
 16 29.3
 17 30.8
 18 32.3
 19 33.8
 20 35.3
 21 36.7
 22 38.2
 23 39.7
 24 41.2
 25 42.6
 26 44.1
 27 45.5
 28 47.0
 29 48.5
 30 49.9
 31 51.5
 32 52.9
 33 54.3
 34 55.8
 35 57.3
 36 58.8
 37 60.4
 38 61.9
 39 63.3
 40 64.2

R
 1 141.0
 2 151.3
 3 161.7
 4 172.0
 5 182.4
 6 192.7
 7 203.1
 8 213.4
 9 223.7
 10 234.1
 11 244.4
 12 254.8
 13 265.1
 14 275.5
 15 286.2



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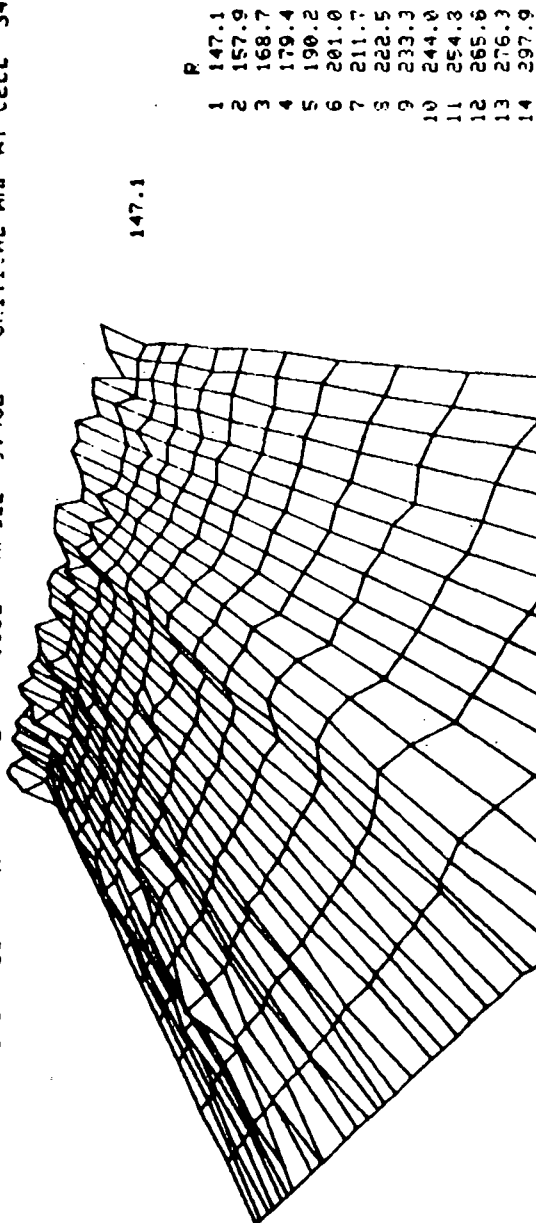
U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839
 * SCAN # 12 FRAME # 8973 ANGLE 64.713 TO FRAME # 9536 ANGLE 9.402 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 166.0
 AVERAGE I - 78.3

ANGLE
 1 64.6
 2 64.3
 3 63.9
 4 63.1
 5 62.1
 6 60.9
 7 59.5
 8 58.0
 9 56.5
 10 55.0
 11 53.5
 12 51.9
 13 50.5
 14 49.1
 15 47.6
 16 46.1
 17 44.5
 18 43.2
 19 41.8
 20 40.3
 21 38.8
 22 37.3
 23 35.8
 24 34.3
 25 32.8
 26 31.3
 27 29.8
 28 28.4
 29 26.8
 30 25.3
 31 23.8
 32 22.2
 33 20.8
 34 19.3
 35 17.8
 36 16.3
 37 14.7
 38 13.2
 39 11.7
 40 10.4
 41 9.6



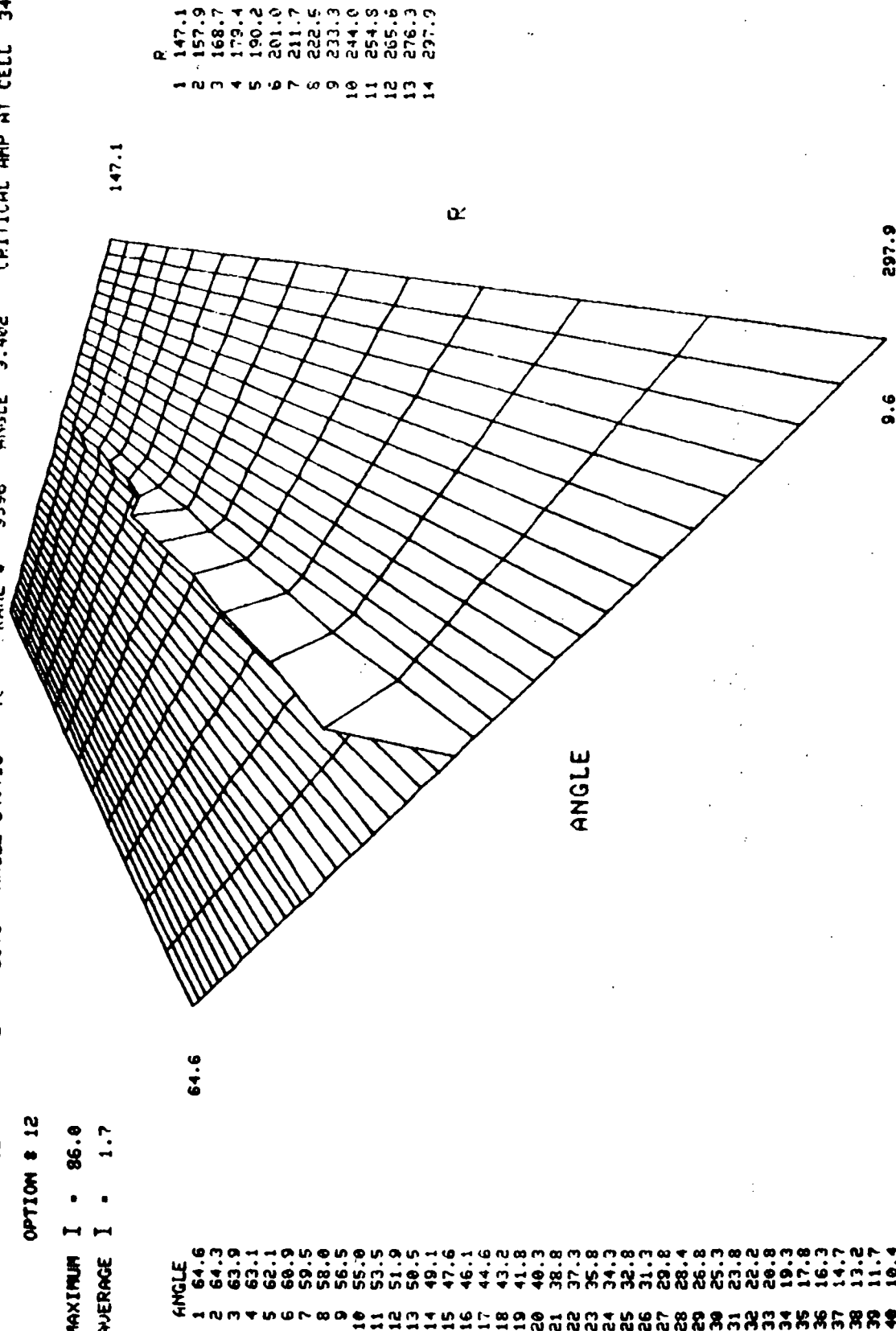
Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20829
 * SCAN # 12 FRAME # 8973 ANGLE 64.718 TO FRAME # 9596 ANGLE 3.402 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 96.0

AVERAGE I - 1.7



R

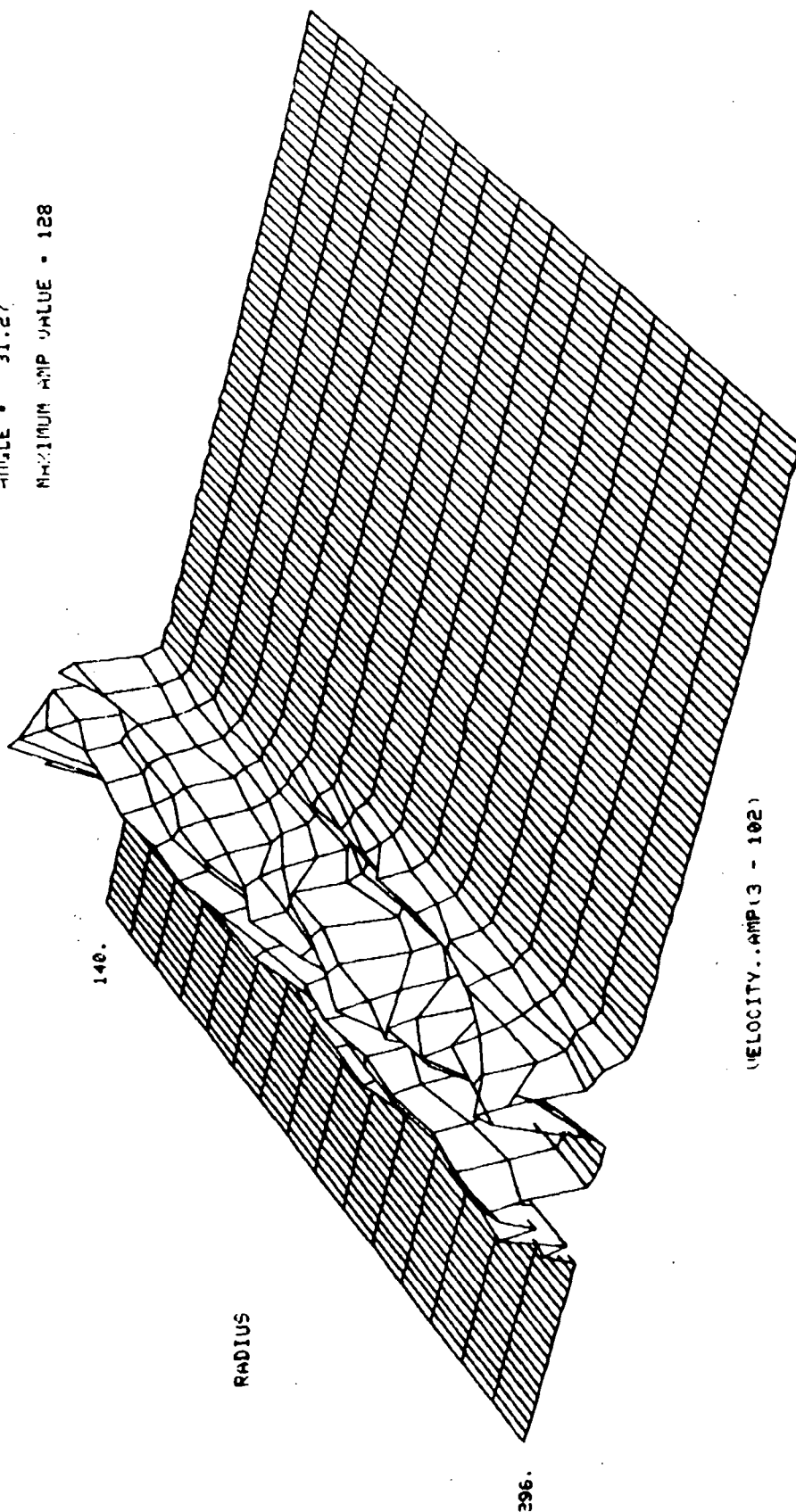
1	147.1
2	157.9
3	168.7
4	179.4
5	190.2
6	201.0
7	211.7
8	222.5
9	233.3
10	244.0
11	254.8
12	265.6
13	276.3
14	287.9

ANGLE

1	64.6
2	64.3
3	63.9
4	63.1
5	62.1
6	60.9
7	59.5
8	58.0
9	56.5
10	55.0
11	53.5
12	51.9
13	50.5
14	49.1
15	47.6
16	46.1
17	44.6
18	43.2
19	41.8
20	40.3
21	38.8
22	37.3
23	35.8
24	34.3
25	32.8
26	31.3
27	29.8
28	28.4
29	26.8
30	25.3
31	23.8
32	22.2
33	20.8
34	19.3
35	17.8
36	16.3
37	14.7
38	13.2
39	11.7
40	10.4
41	9.6

I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20359
 SCAN # 12 FRAME # 8973 ANGLE 64.718 TO FRAME # 9596 ANGLE 9.402 CRITICAL AMP AT CELL 34
 FRAME # 9352 TO 9368
 ANGLE - 31.27
 MAXIMUM AMP VALUE - 128



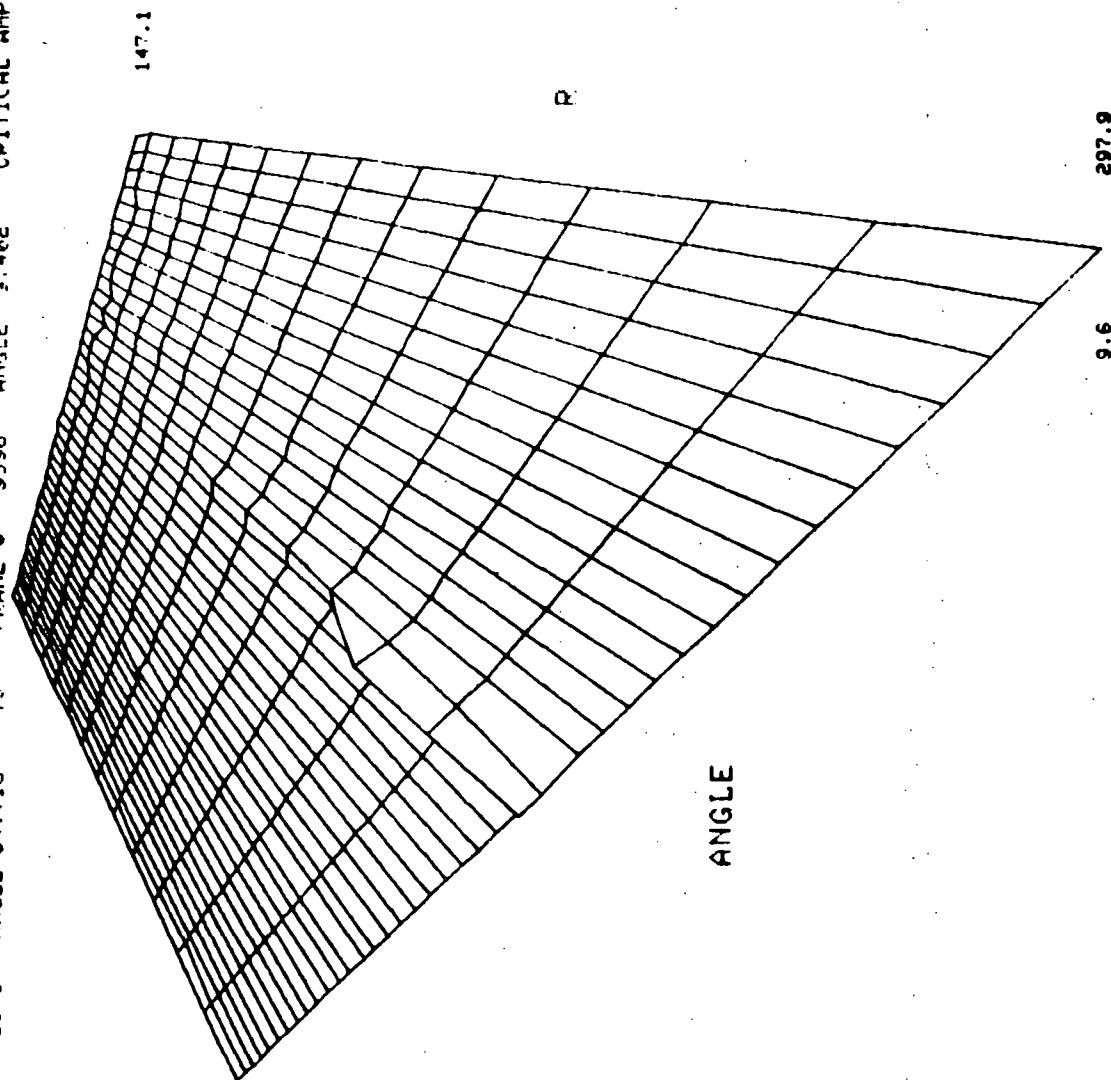
NASA PROJECT DUST DEVIL DAY 230 RUN # 17 TAPE 1 OF 2-20889
 * SCAN # 12 FRAME # 8973 ANGLE 64.713 TO FRAME # 9596 ANGLE 2.402 OPTICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 41.0

AVERAGE U - 27.1

R
 1 147.1
 2 157.9
 3 168.7
 4 179.4
 5 190.2
 6 201.0
 7 211.7
 8 222.5
 9 233.3
 10 244.0
 11 254.8
 12 265.6
 13 276.3
 14 287.9



ANGLE
 1 64.6
 2 64.3
 3 63.9
 4 63.1
 5 62.1
 6 60.9
 7 59.5
 8 58.0
 9 56.5
 10 55.0
 11 53.5
 12 51.9
 13 50.5
 14 49.1
 15 47.6
 16 46.1
 17 44.6
 18 43.2
 19 41.8
 20 40.3
 21 38.8
 22 37.3
 23 35.8
 24 34.3
 25 32.8
 26 31.3
 27 29.8
 28 28.4
 29 26.8
 30 25.3
 31 23.8
 32 22.2
 33 20.8
 34 19.3
 35 17.8
 36 16.3
 37 14.7
 38 13.2
 39 11.7
 40 10.4
 41 9.6

U, R, A DISPLAY (VELOCITY AT IMAX)

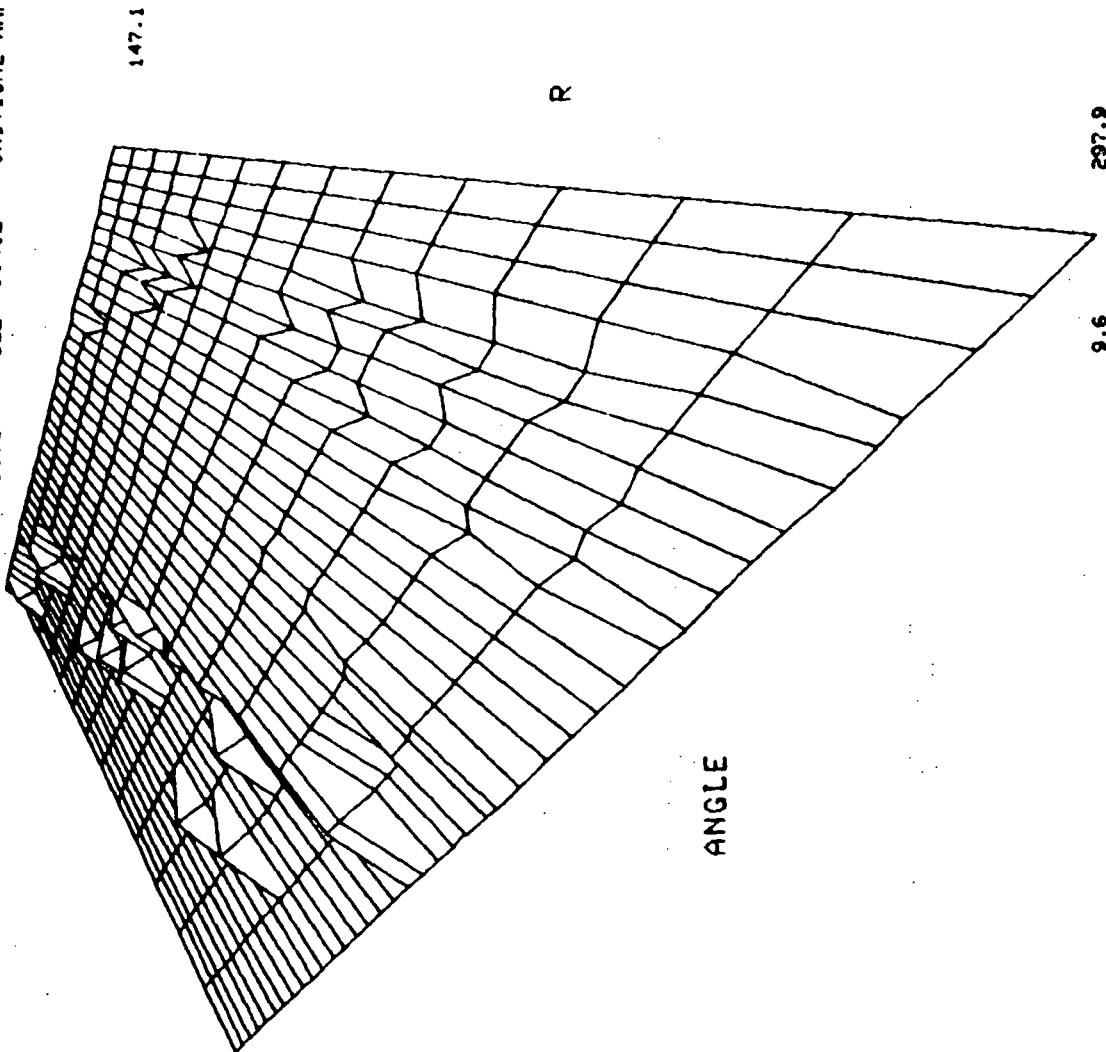
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 12 FRAME # 8973 ANGLE 64.710 TO FRAME # 9596 ANGLE 9.402 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 41.0

AVERAGE U - 18.2

ANGLE
 1 64.6
 2 64.3
 3 63.9
 4 63.1
 5 62.1
 6 60.9
 7 59.5
 8 58.0
 9 56.5
 10 55.0
 11 53.5
 12 51.9
 13 50.5
 14 49.1
 15 47.6
 16 46.1
 17 44.6
 18 43.2
 19 41.8
 20 40.3
 21 38.8
 22 37.3
 23 35.8
 24 34.3
 25 32.8
 26 31.3
 27 29.8
 28 28.4
 29 26.8
 30 25.3
 31 23.8
 32 22.2
 33 20.8
 34 19.3
 35 17.8
 36 16.3
 37 14.7
 38 13.2
 39 11.7
 40 10.4
 41 9.6

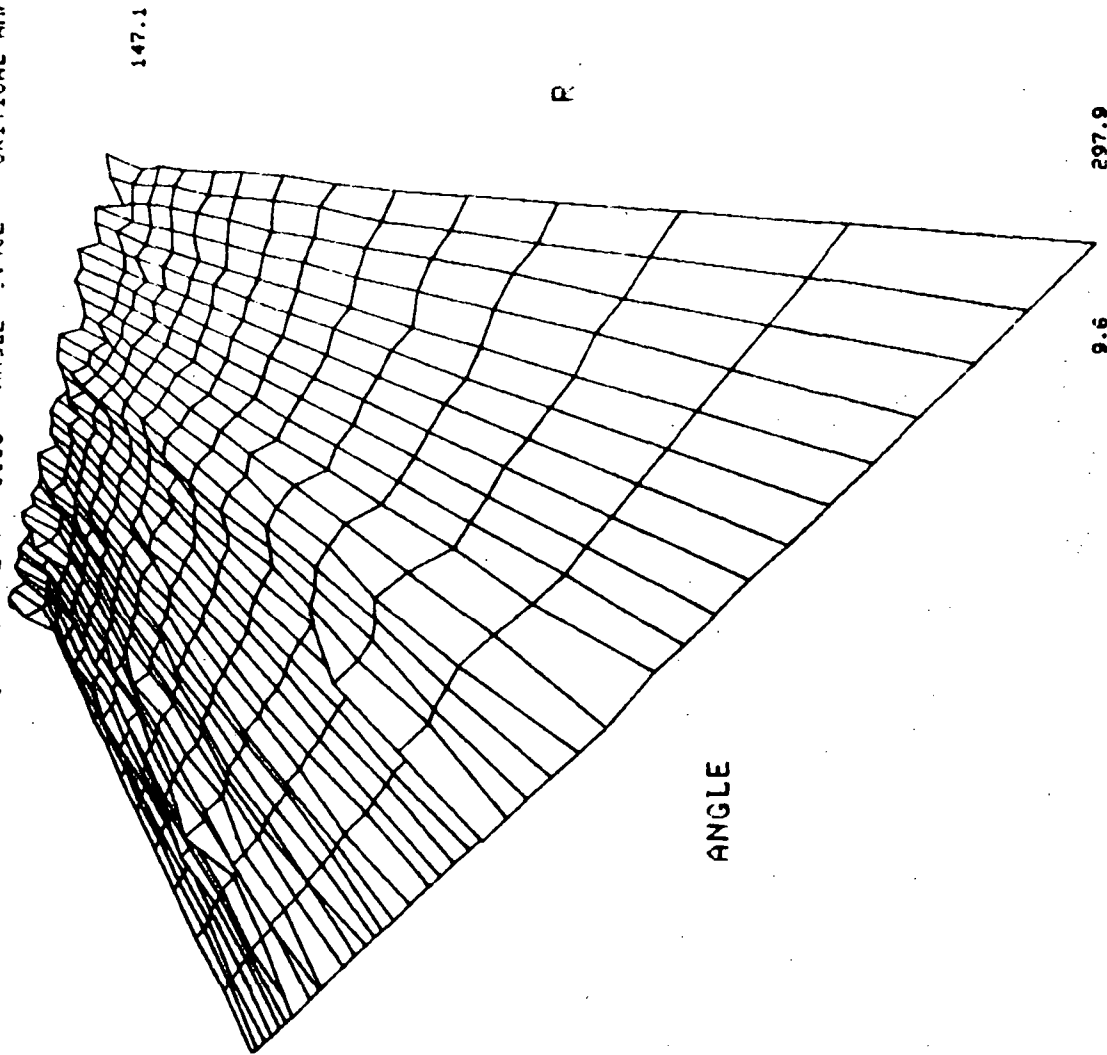


R
 1 147.1
 2 157.9
 3 168.7
 4 179.4
 5 190.2
 6 201.0
 7 211.7
 8 222.5
 9 233.3
 10 244.0
 11 254.8
 12 265.6
 13 276.3
 14 287.9

U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPR 1 OF 2-30289
 SCAN # 12 FRAME # 8973 ANGLE 64.718 TO FRAME # 9596 ANGLE 9.402 CRITICAL AMP AT CELL 34
 OPTION # 31

R
 1 147.1
 2 157.9
 3 168.7
 4 173.4
 5 190.2
 6 201.0
 7 211.7
 8 222.5
 9 233.3
 10 244.0
 11 254.8
 12 265.6
 13 276.3
 14 297.9



ANGLE
 1 64.6
 2 64.3
 3 63.9
 4 63.1
 5 62.1
 6 60.9
 7 59.5
 8 58.0
 9 56.5
 10 55.0
 11 53.5
 12 51.9
 13 50.5
 14 49.1
 15 47.6
 16 46.1
 17 44.6
 18 43.2
 19 41.8
 20 40.3
 21 38.8
 22 37.3
 23 35.8
 24 34.3
 25 32.8
 26 31.3
 27 29.8
 28 28.4
 29 26.8
 30 25.3
 31 23.8
 32 22.2
 33 20.8
 34 19.3
 35 17.8
 36 16.3
 37 14.7
 38 13.2
 39 11.7
 40 10.4
 41 9.6

U * Imax, R, A DISPLAY

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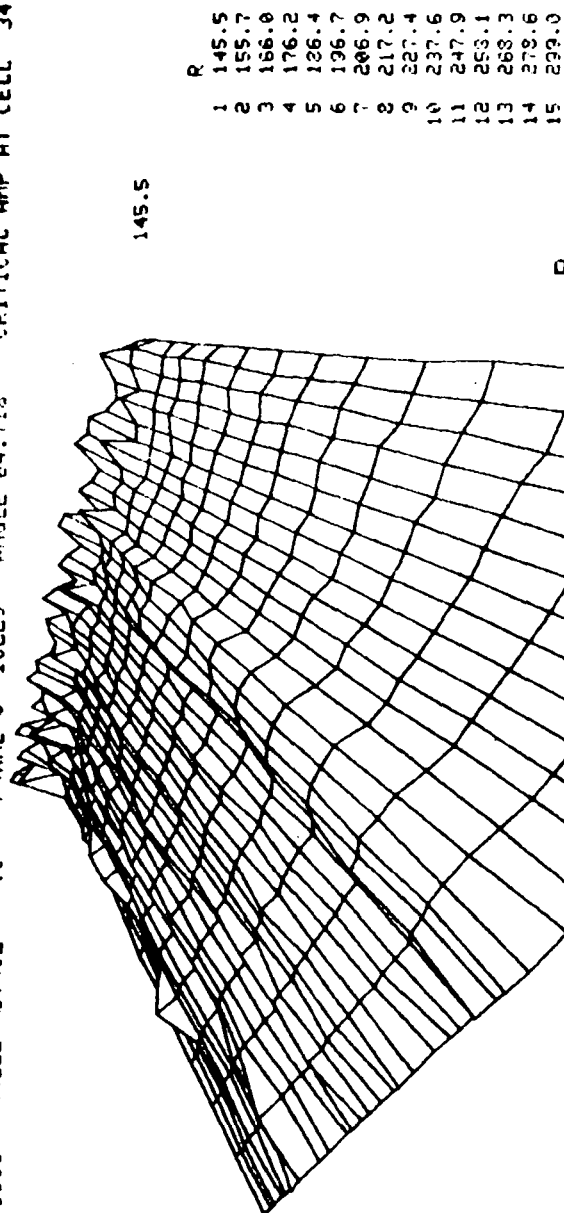
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 13 FRAME # 9596 ANGLE 9.402 TO FRAME # 10225 ANGLE 64.718 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 162.0

AVERAGE I - 74.4

ANGLE
 1 9.7
 2 9.9
 3 10.4
 4 11.3
 5 12.5
 6 13.7
 7 15.1
 8 16.6
 9 18.2
 10 19.7
 11 21.2
 12 22.6
 13 24.1
 14 25.7
 15 27.2
 16 28.6
 17 30.1
 18 31.6
 19 33.1
 20 34.6
 21 36.1
 22 37.6
 23 39.0
 24 40.6
 25 42.0
 26 43.5
 27 44.8
 28 46.2
 29 47.8
 30 49.3
 31 50.7
 32 52.3
 33 53.7
 34 55.2
 35 56.7
 36 58.1
 37 59.6
 38 61.2
 39 62.7
 40 64.0
 41 64.4



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 OF POOR QUALITY

IMAX, P, A DISPLAY

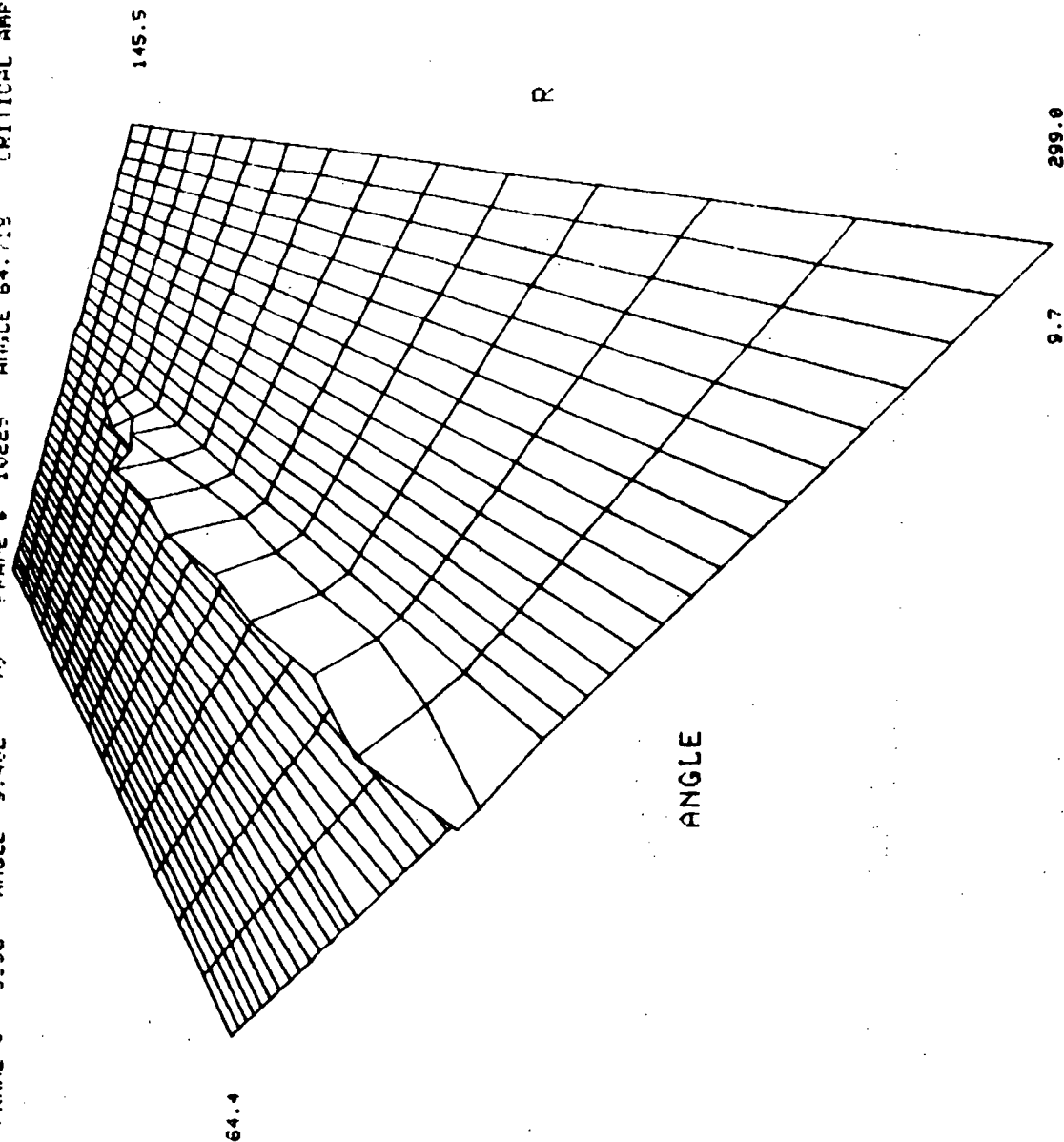
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839
 * SCAN # 13 FRAME # 9596 ANGLE 9.402 TO FRAME # 10225 ANGLE 64.719 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 68.0

AVERAGE I - 1.9

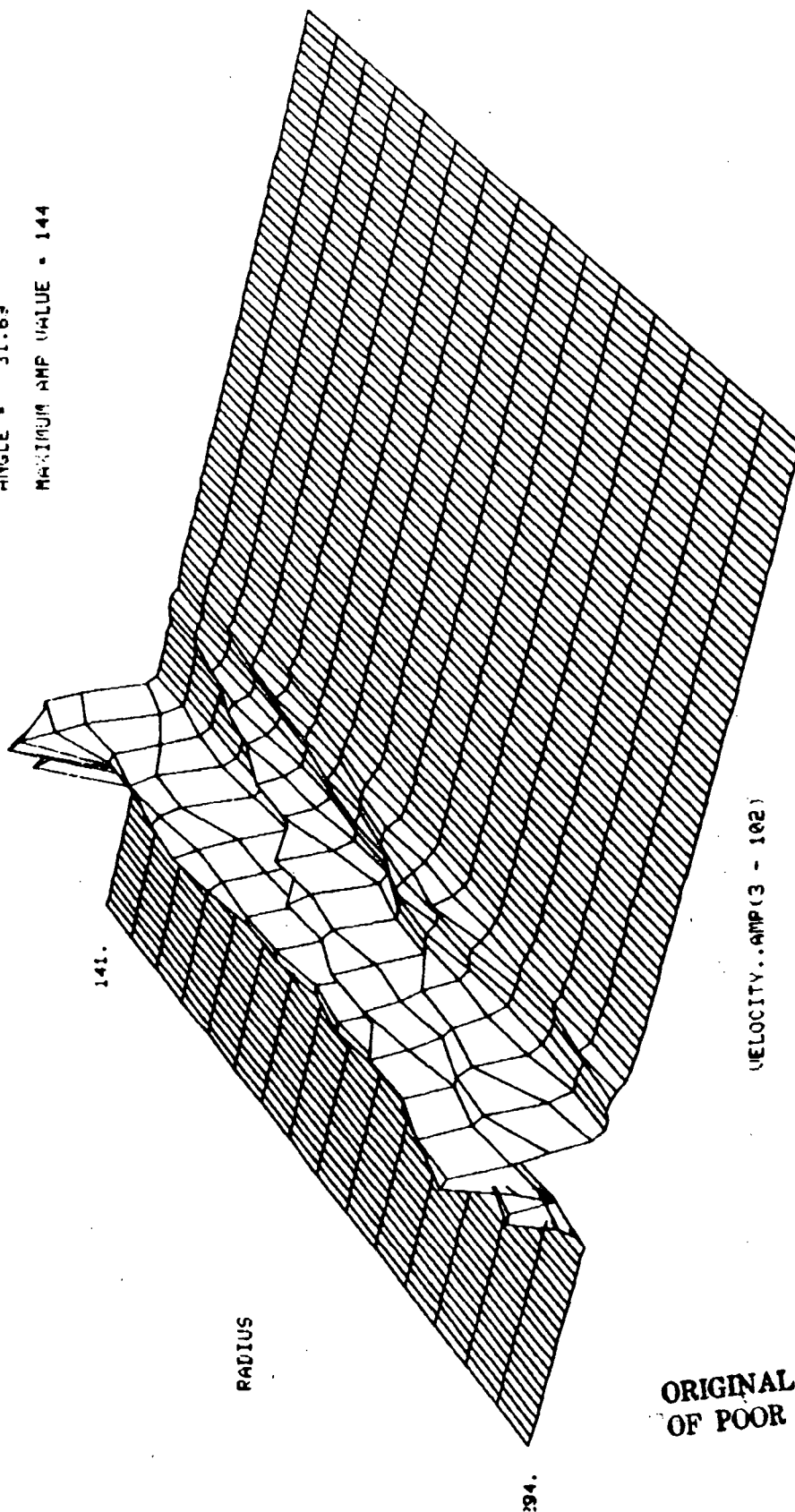
ANGLE
1 9.7
2 9.9
3 10.4
4 11.3
5 12.5
6 13.7
7 15.1
8 16.6
9 18.2
10 19.7
11 21.2
12 22.6
13 24.1
14 25.7
15 27.2
16 28.6
17 30.1
18 31.6
19 33.1
20 34.6
21 36.1
22 37.6
23 39.0
24 40.6
25 42.0
26 43.5
27 44.8
28 46.2
29 47.8
30 49.3
31 50.7
32 52.3
33 53.7
34 55.2
35 56.7
36 58.1
37 59.6
38 61.2
39 62.7
40 64.0
41 64.4



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I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 13 FRAME # 9596 ANGLE 9.402 TO FRAME # 10225 ANGLE 64.718 CRITICAL AMP AT CELL 34
 FRAME # 9353 TO 9869
 ANGLE - 31.69
 MAXIMUM AMP VALUE - 144



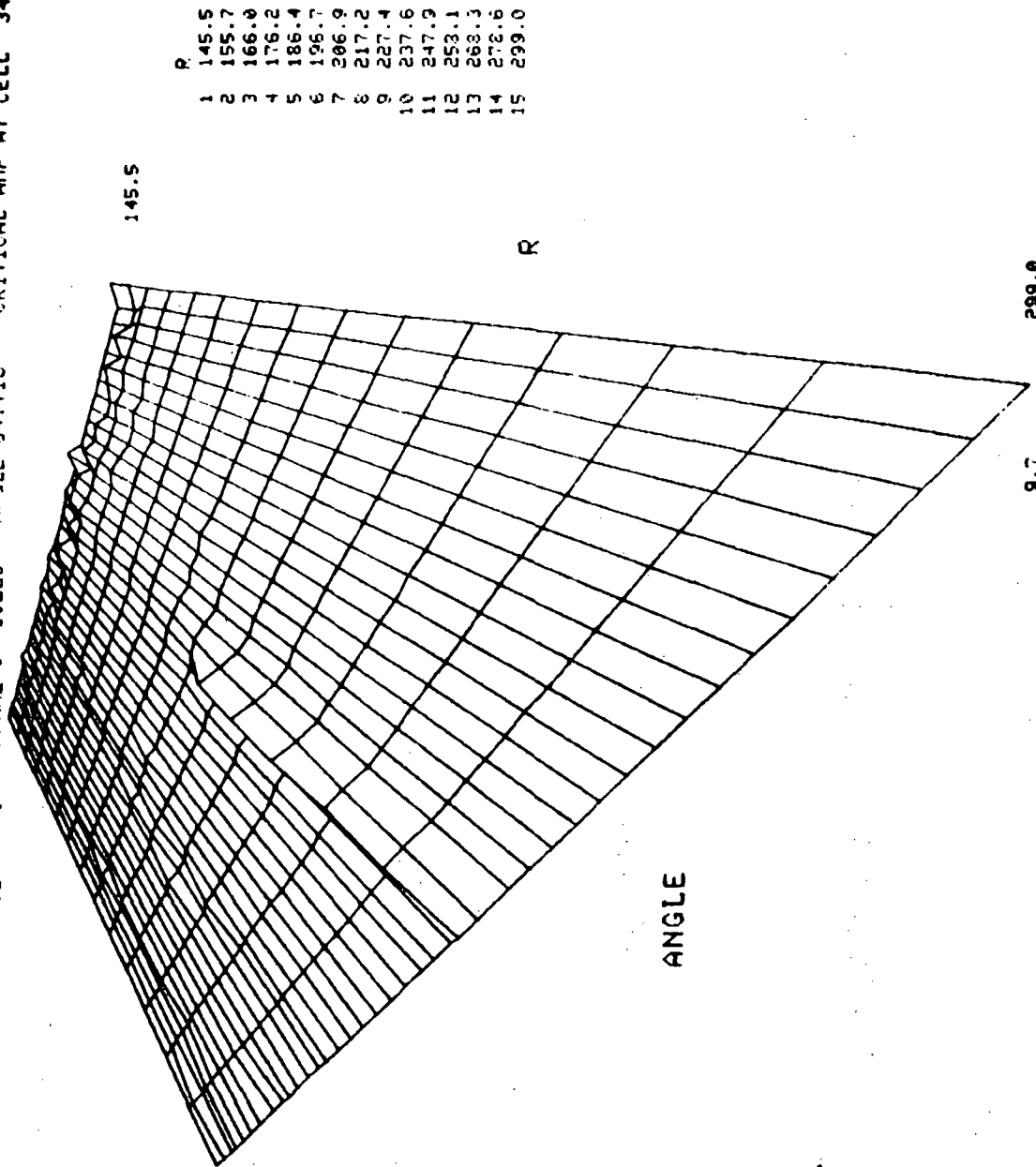
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NASA PROJECT DUST DEVIL DAY 206 RUN 1 17 TAPE 1 OF 3-20622
 SCAN # 13 FRAME # 9596 ANGLE 9.402 TO FRAME # 10325 ANGLE 64.713 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 33.0
 AVERAGE U - 26.9

ANGLE
 1 9.7
 2 9.9
 3 10.4
 4 11.3
 5 12.5
 6 13.7
 7 15.1
 8 16.6
 9 18.2
 10 19.7
 11 21.2
 12 22.6
 13 24.1
 14 25.7
 15 27.2
 16 28.6
 17 30.1
 18 31.6
 19 33.1
 20 34.6
 21 36.1
 22 37.6
 23 39.0
 24 40.6
 25 42.0
 26 43.5
 27 44.8
 28 46.2
 29 47.8
 30 49.3
 31 50.7
 32 52.3
 33 53.7
 34 55.2
 35 56.7
 36 58.1
 37 59.6
 38 61.2
 39 62.7
 40 64.0
 41 64.4



R
 1 145.5
 2 155.7
 3 166.0
 4 176.2
 5 186.4
 6 196.7
 7 206.9
 8 217.2
 9 227.4
 10 237.6
 11 247.9
 12 253.1
 13 263.3
 14 273.6
 15 299.0

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U, R, A DISPLAY (VELOCITY AT I MAX)

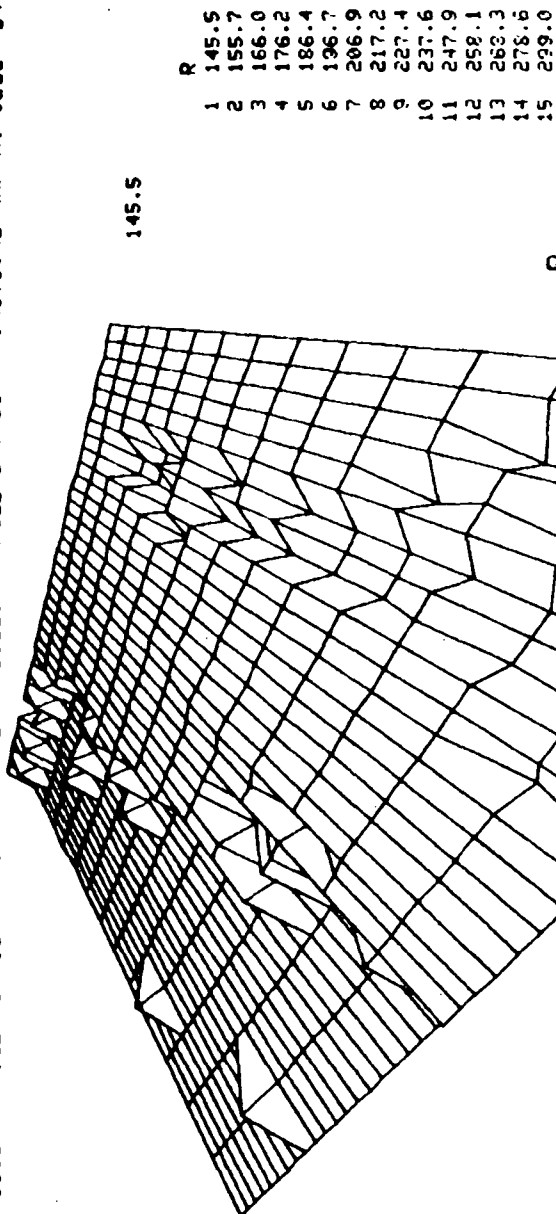
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 13 FRAME # 9596 ANGLE 9.402 TO FRAME # 10225 ANGLE 64.718 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 33.0

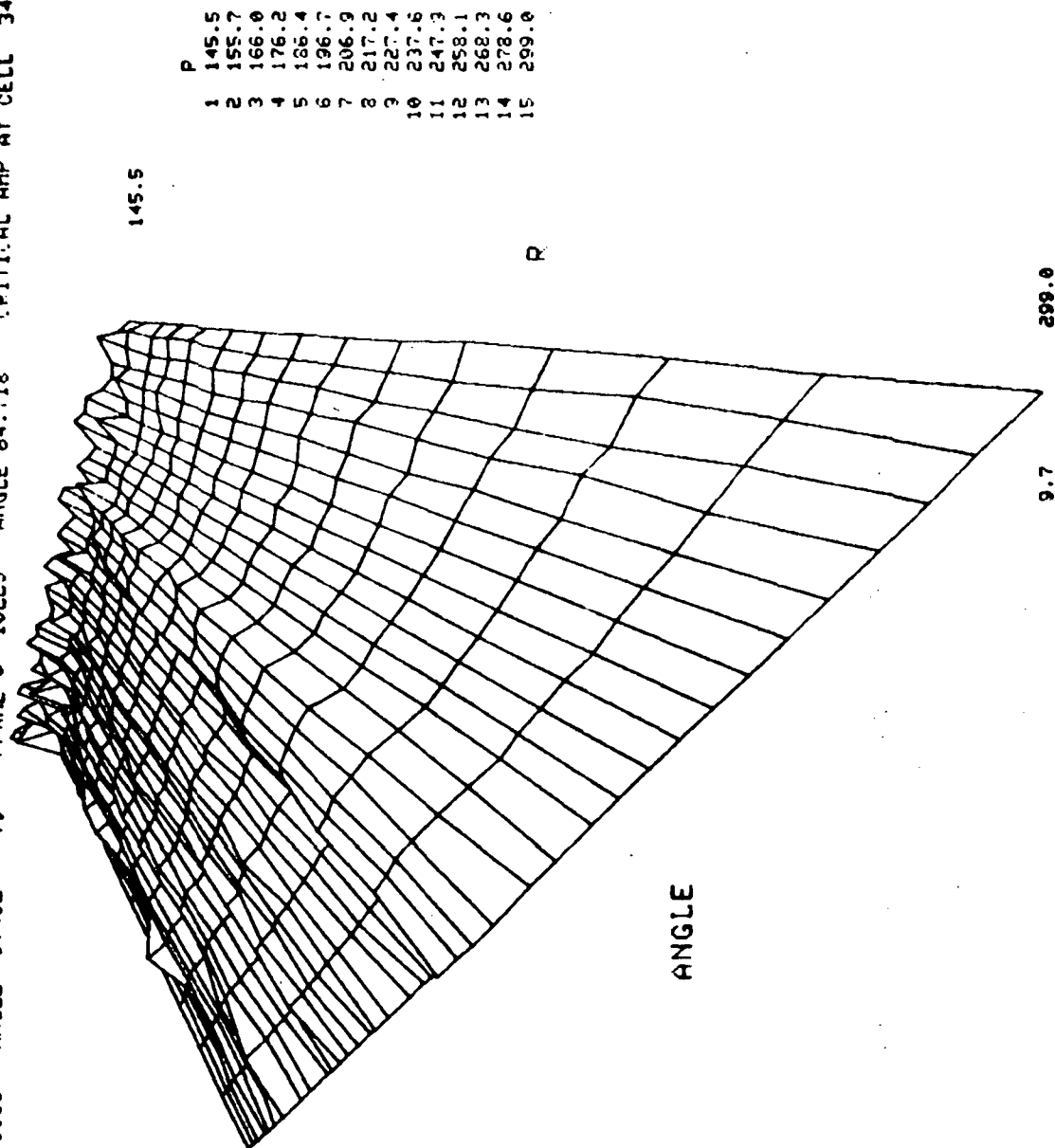
AVERAGE U - 16.3

ANGLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
9.7	9.9	10.4	11.3	12.5	13.7	15.1	16.6	18.2	19.7	21.2	22.6	24.1	25.7	27.2	28.6	30.1	31.6	33.1	34.6	36.1	37.6	39.0	40.6	42.0	43.5	44.8	46.2	47.8	49.3	50.7	52.3	53.7	55.2	56.7	58.1	59.6	61.2	62.7	64.0	64.4	



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 286 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 13 FRAME # 9596 ANGLE 9.402 TO FRAME # 10225 ANGLE 64.718 OPTICAL AMP AT CELL 34
 OPTION # 31



P
 1 145.5
 2 155.7
 3 166.0
 4 176.2
 5 186.4
 6 196.7
 7 206.9
 8 217.2
 9 227.4
 10 237.6
 11 247.3
 12 258.1
 13 268.3
 14 278.6
 15 289.0

ANGLE
 1 9.7
 2 9.9
 3 10.4
 4 11.3
 5 12.5
 6 13.7
 7 15.1
 8 16.6
 9 18.2
 10 19.7
 11 21.2
 12 22.6
 13 24.1
 14 25.7
 15 27.2
 16 28.6
 17 30.1
 18 31.6
 19 33.1
 20 34.6
 21 36.1
 22 37.6
 23 39.0
 24 40.6
 25 42.0
 26 43.5
 27 44.8
 28 46.2
 29 47.8
 30 49.3
 31 50.7
 32 52.3
 33 53.7
 34 55.2
 35 56.7
 36 58.1
 37 59.6
 38 61.2
 39 62.7
 40 64.0
 41 64.4

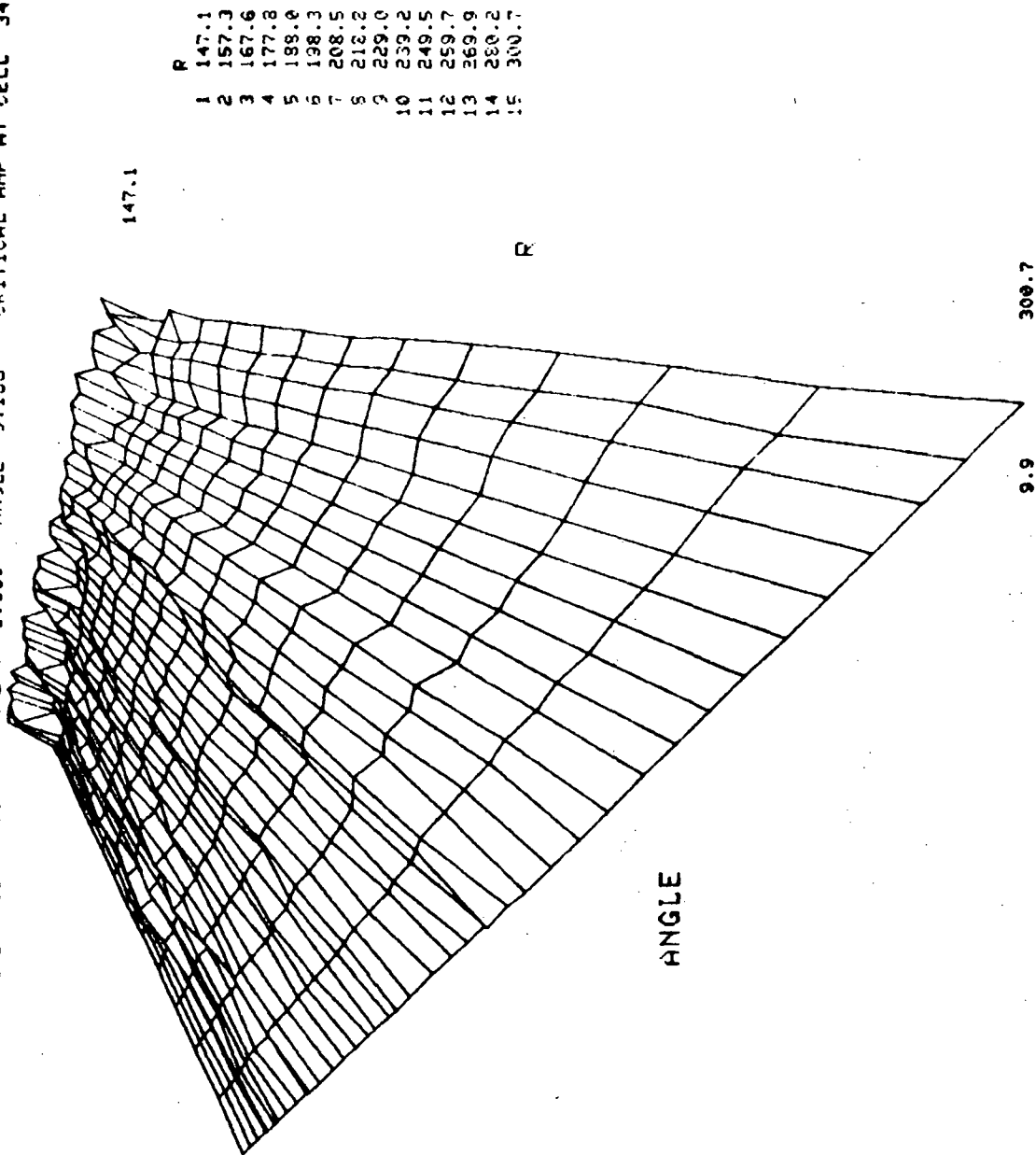
U X Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 1 OF 2-20289
 SCAN # 14 FRAME # 10225 ANGLE 64.718 TO FRAME # 10339 ANGLE 9.183 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 162.0
 AVERAGE I - 66.8

ANGLE
 1 64.6
 2 64.1
 3 63.5
 4 62.6
 5 61.6
 6 60.1
 7 58.6
 8 57.2
 9 55.6
 10 54.1
 11 52.6
 12 51.1
 13 49.7
 14 48.2
 15 46.7
 16 45.3
 17 43.9
 18 42.4
 19 41.0
 20 39.5
 21 38.0
 22 36.5
 23 35.0
 24 33.5
 25 32.0
 26 30.6
 27 29.1
 28 27.6
 29 26.0
 30 24.5
 31 23.0
 32 21.4
 33 20.0
 34 18.5
 35 16.9
 36 15.4
 37 13.9
 38 12.4
 39 10.9
 40 9.9



R
 1 147.1
 2 157.3
 3 167.6
 4 177.8
 5 188.0
 6 198.3
 7 208.5
 8 218.2
 9 229.0
 10 239.2
 11 249.5
 12 259.7
 13 269.9
 14 280.2
 15 300.7

IMAX, P, A DISPLAY

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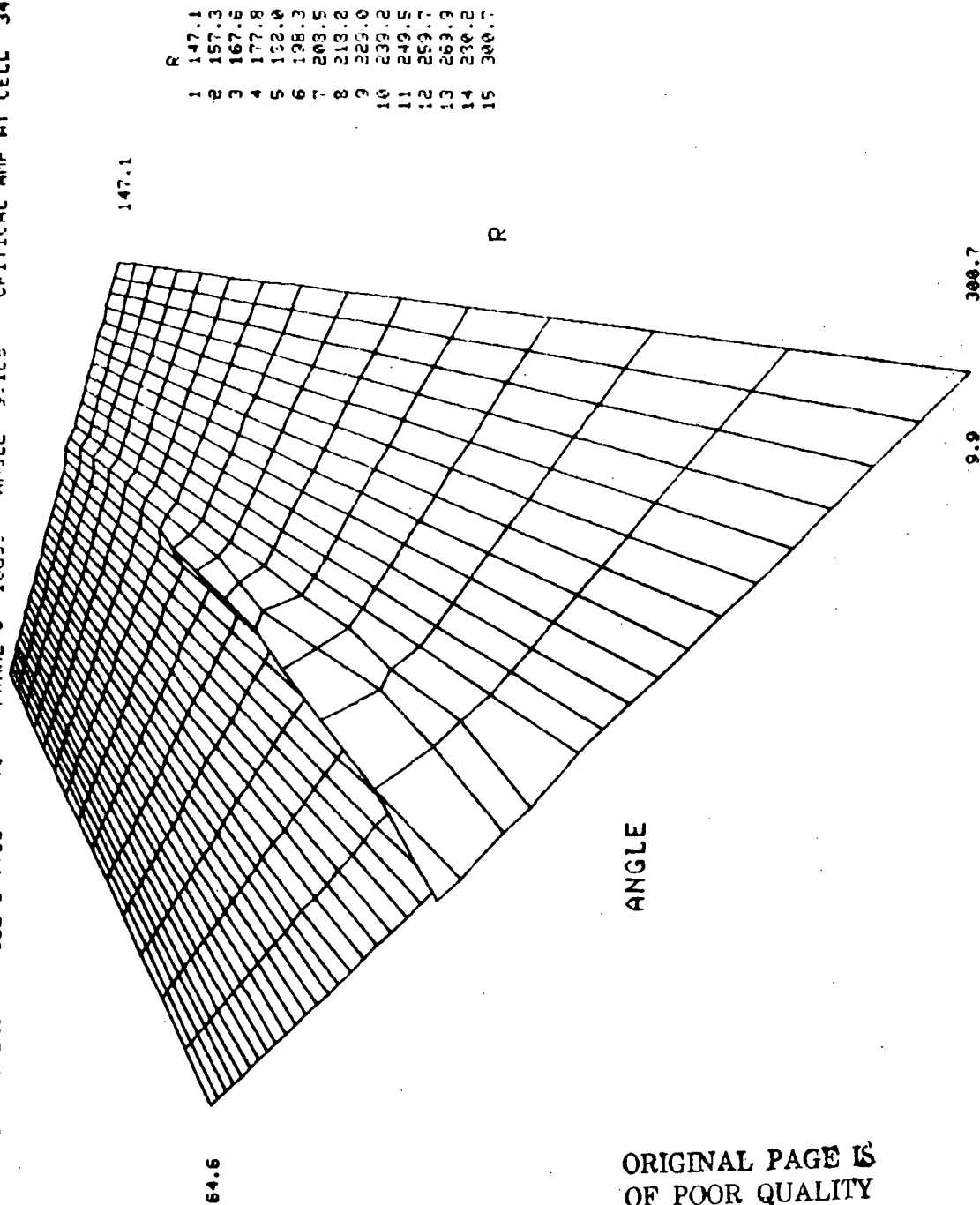
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 14 FRAME # 10285 ANGLE 64.718 TO FRAME # 10839 ANGLE 3.123 CRITICAL WMP AT CELL 34

OPTION # 12

MAXIMUM I - 104.0

AVERAGE I - 2.5

ANGLE
 1 64.6
 2 64.1
 3 63.5
 4 62.6
 5 61.6
 6 60.1
 7 58.6
 8 57.2
 9 55.6
 10 54.1
 11 52.6
 12 51.1
 13 49.7
 14 48.2
 15 46.7
 16 45.3
 17 43.9
 18 42.4
 19 41.0
 20 39.5
 21 38.0
 22 36.5
 23 35.0
 24 33.5
 25 32.0
 26 30.6
 27 29.1
 28 27.6
 29 26.0
 30 24.5
 31 23.0
 32 21.4
 33 20.0
 34 18.5
 35 16.9
 36 15.4
 37 13.9
 38 12.4
 39 10.9
 40 9.9

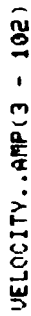


R
 1 147.1
 2 157.3
 3 167.6
 4 177.8
 5 188.0
 6 198.3
 7 208.5
 8 218.2
 9 229.0
 10 239.2
 11 249.5
 12 259.7
 13 269.9
 14 280.2
 15 300.7

ORIGINAL PAGE IS
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I, R, A DISPLAY AT VELOCITY CELL 34

TYPE 1 OF 2-20389



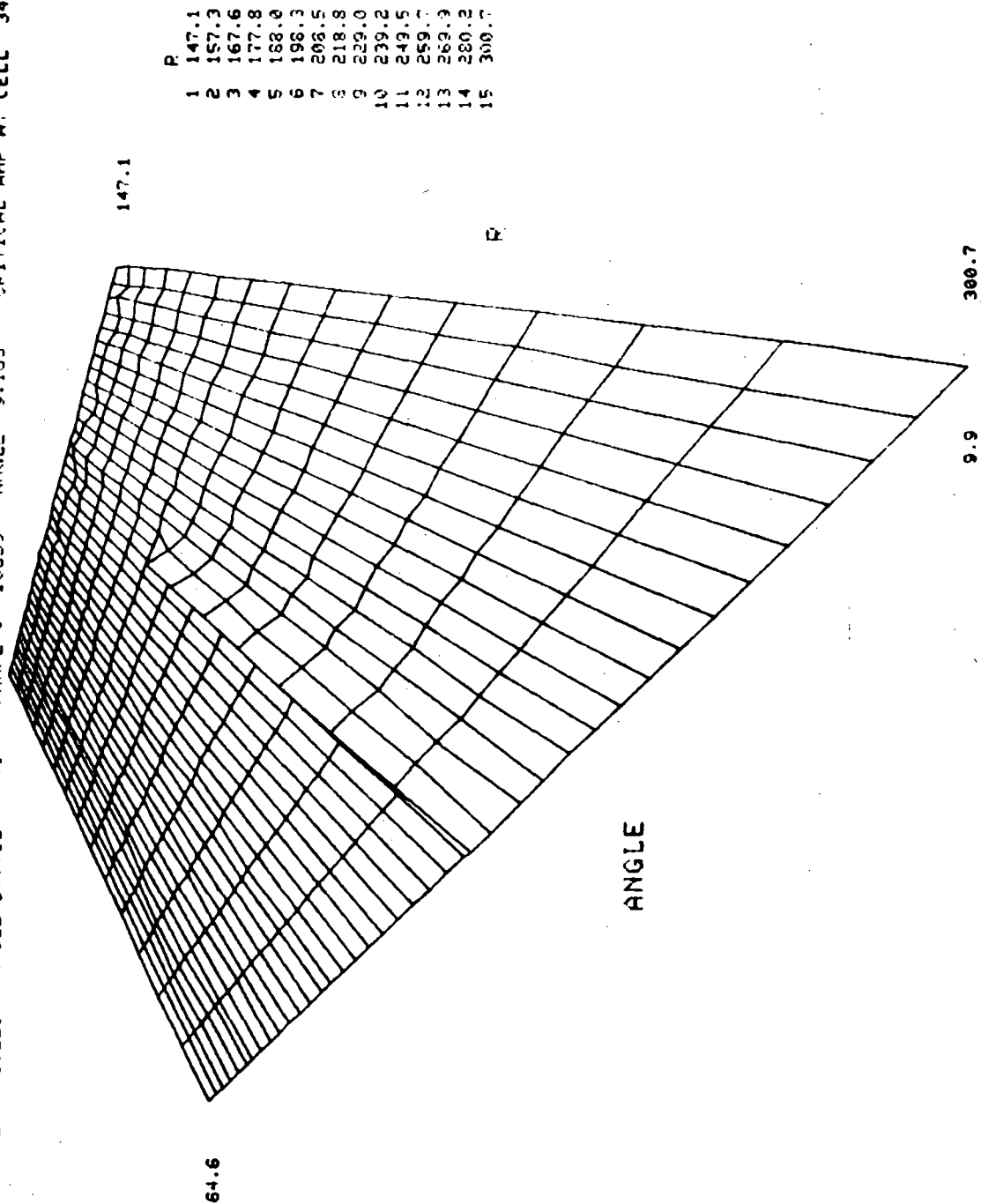
NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20829
 * SCAN # 14 FRAME # 10225 ANGLE 54.715 TO FRAME # 10239 ANGLE 9.139 OPTICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 38.0

AVERAGE U - 26.8

ANGLE
1 64.6
2 64.1
3 63.5
4 62.6
5 61.6
6 60.1
7 58.6
8 57.2
9 55.6
10 54.1
11 52.6
12 51.1
13 49.7
14 48.2
15 46.7
16 45.3
17 43.9
18 42.4
19 41.0
20 39.5
21 38.0
22 36.5
23 35.0
24 33.5
25 32.0
26 30.6
27 29.1
28 27.6
29 26.0
30 24.5
31 23.0
32 21.4
33 20.0
34 18.5
35 16.9
36 15.4
37 13.9
38 12.4
39 10.9
40 9.9



U, R, A DISPLAY (VELOCITY AT I_max)

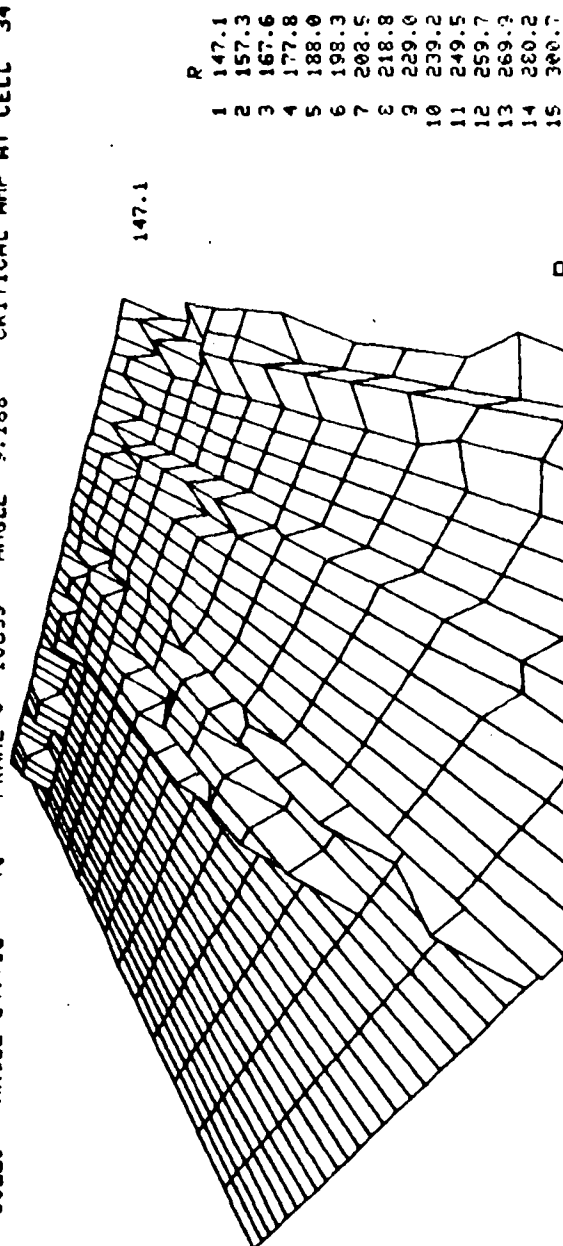
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 14 FRAME # 10225 ANGLE 64.713 TO FRAME # 10839 ANGLE 9.186 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 38.0

AVERAGE U - 11.6

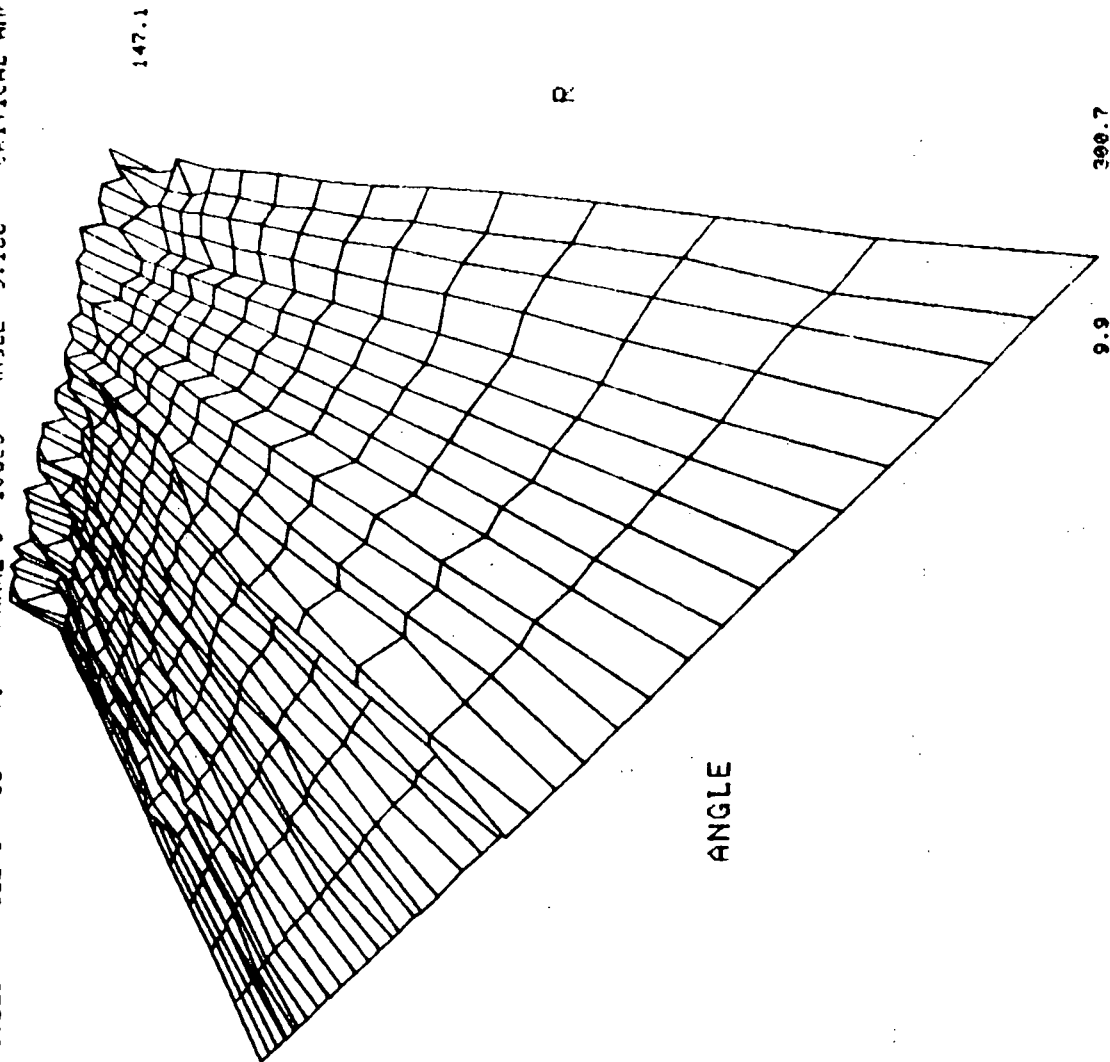
ANGLE
 1 64.6
 2 64.1
 3 63.5
 4 62.6
 5 61.6
 6 60.1
 7 58.6
 8 57.2
 9 55.6
 10 54.1
 11 52.6
 12 51.1
 13 49.7
 14 48.2
 15 46.7
 16 45.3
 17 43.9
 18 42.4
 19 41.0
 20 39.5
 21 38.0
 22 36.5
 23 35.0
 24 33.5
 25 32.0
 26 30.6
 27 29.1
 28 27.6
 29 26.0
 30 24.5
 31 23.0
 32 21.4
 33 20.0
 34 18.5
 35 16.9
 36 15.4
 37 13.9
 38 12.4
 39 10.9
 40 9.9



U_{max}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 235 RUN # 10 TAPR 1 OF 2-200393
 SCAN # 14 FRAME # 10225 ANGLE 64.718 TO FRAME # 10230 ANGLE 3.182 OPTICHL WMP AT CELL 34
 OPTION # 31

R
 1 147.1
 2 157.3
 3 167.6
 4 177.8
 5 183.0
 6 192.3
 7 203.5
 8 212.8
 9 223.0
 10 239.2
 11 249.5
 12 259.7
 13 269.9
 14 280.2
 15 300.7



ANGLE
 1 64.6
 2 64.1
 3 63.5
 4 62.6
 5 61.6
 6 60.1
 7 58.6
 8 57.2
 9 55.6
 10 54.1
 11 52.6
 12 51.1
 13 49.7
 14 48.2
 15 46.7
 16 45.3
 17 43.9
 18 42.4
 19 41.0
 20 39.5
 21 38.0
 22 36.5
 23 35.0
 24 33.5
 25 32.0
 26 30.6
 27 29.1
 28 27.6
 29 26.0
 30 24.5
 31 23.0
 32 21.4
 33 20.0
 34 18.5
 35 16.9
 36 15.4
 37 13.9
 38 12.4
 39 10.9
 40 9.9

U * IMAX, R, A DISPLAY

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 15 FRAME # 10939 ANGLE 9.193 TO FRAME # 11455 ANGLE 64.552 CRITICAL WMP AT CELL 34

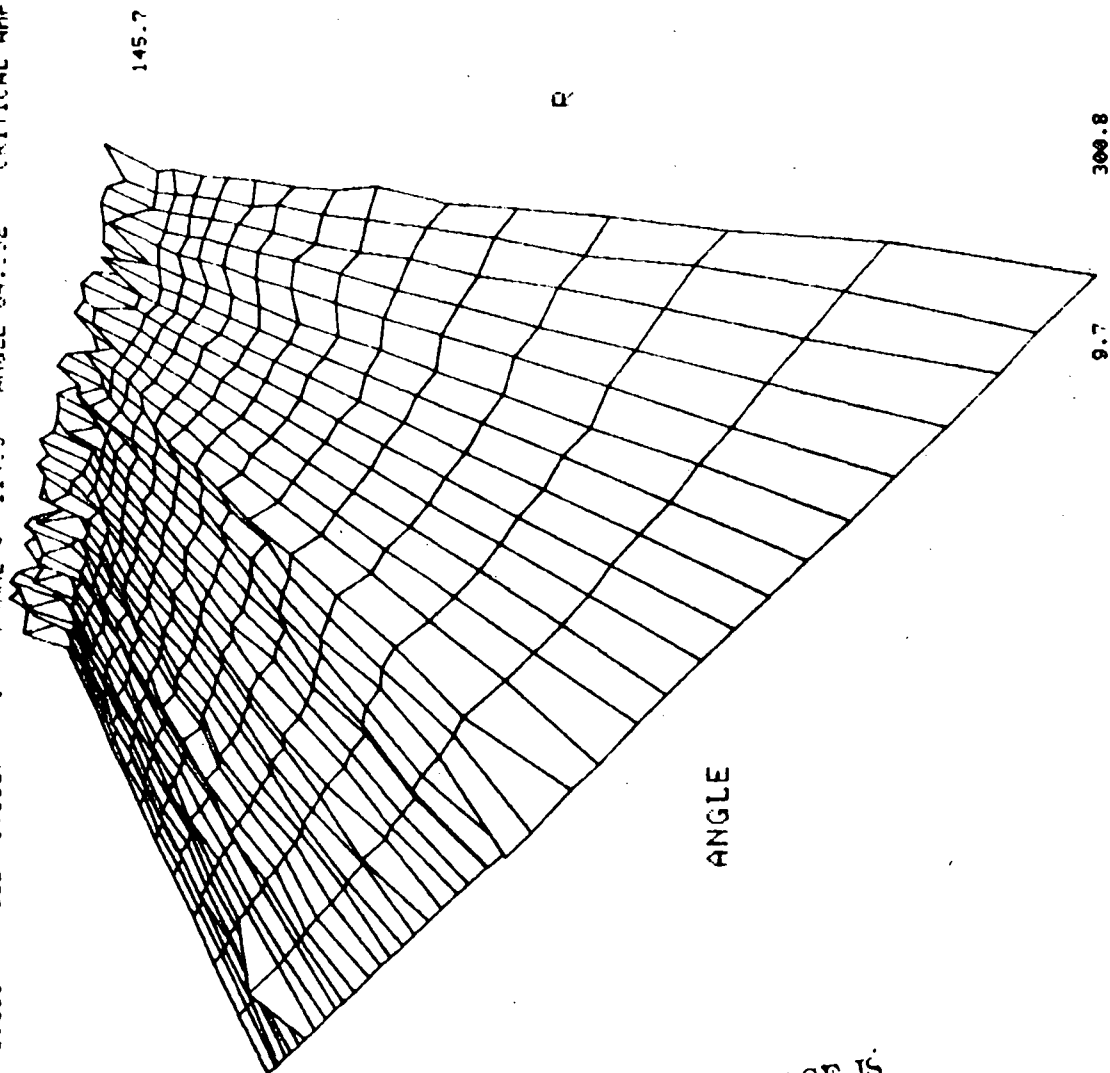
OPTION # 11

MAXIMUM I - 162.0

AVERAGE I - 64.6

ANGLE
 1 9.7
 2 10.1
 3 10.9
 4 11.8
 5 13.2
 6 14.5
 7 16.0
 8 17.5
 9 19.0
 10 20.4
 11 21.9
 12 23.4
 13 24.9
 14 26.4
 15 28.0
 16 29.4
 17 31.0
 18 32.5
 19 33.9
 20 35.5
 21 36.9
 22 38.4
 23 39.8
 24 41.3
 25 42.8
 26 44.2
 27 45.7
 28 47.2
 29 48.6
 30 50.0
 31 51.5
 32 53.0
 33 54.5
 34 56.0
 35 57.5
 36 59.0
 37 60.5
 38 62.0
 39 63.4
 40 64.4

R
 1 145.7
 2 156.1
 3 166.4
 4 176.8
 5 187.1
 6 197.4
 7 207.6
 8 213.1
 9 223.4
 10 233.8
 11 249.1
 12 259.5
 13 269.3
 14 280.1
 15 300.3



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IMAX, R, A DISPLAY

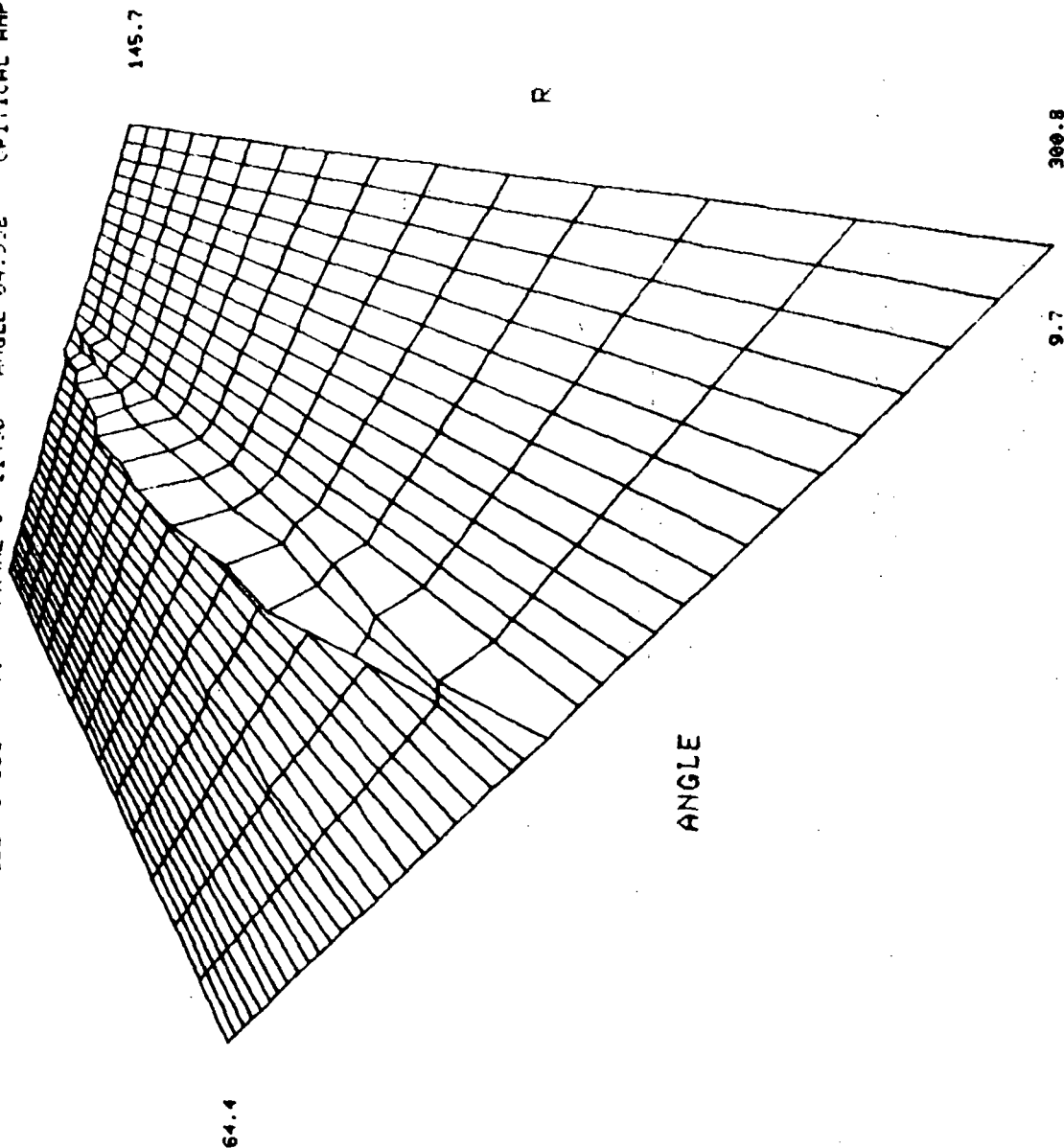
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-30839
 SCAN # 15 FRAME # 10839 ANGLE 9.182 TO FRAME # 11456 ANGLE 64.552 OPTICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 68.0
 AVERAGE I - 2.1

ANGLE
 1 9.7
 2 10.1
 3 10.9
 4 11.8
 5 13.2
 6 14.5
 7 16.0
 8 17.5
 9 19.0
 10 20.4
 11 21.9
 12 23.4
 13 24.9
 14 26.4
 15 28.0
 16 29.4
 17 31.0
 18 32.5
 19 33.9
 20 35.5
 21 36.9
 22 38.4
 23 39.8
 24 41.3
 25 42.8
 26 44.2
 27 45.7
 28 47.2
 29 48.6
 30 50.0
 31 51.5
 32 53.0
 33 54.5
 34 56.0
 35 57.5
 36 59.0
 37 60.5
 38 62.0
 39 63.4
 40 64.4

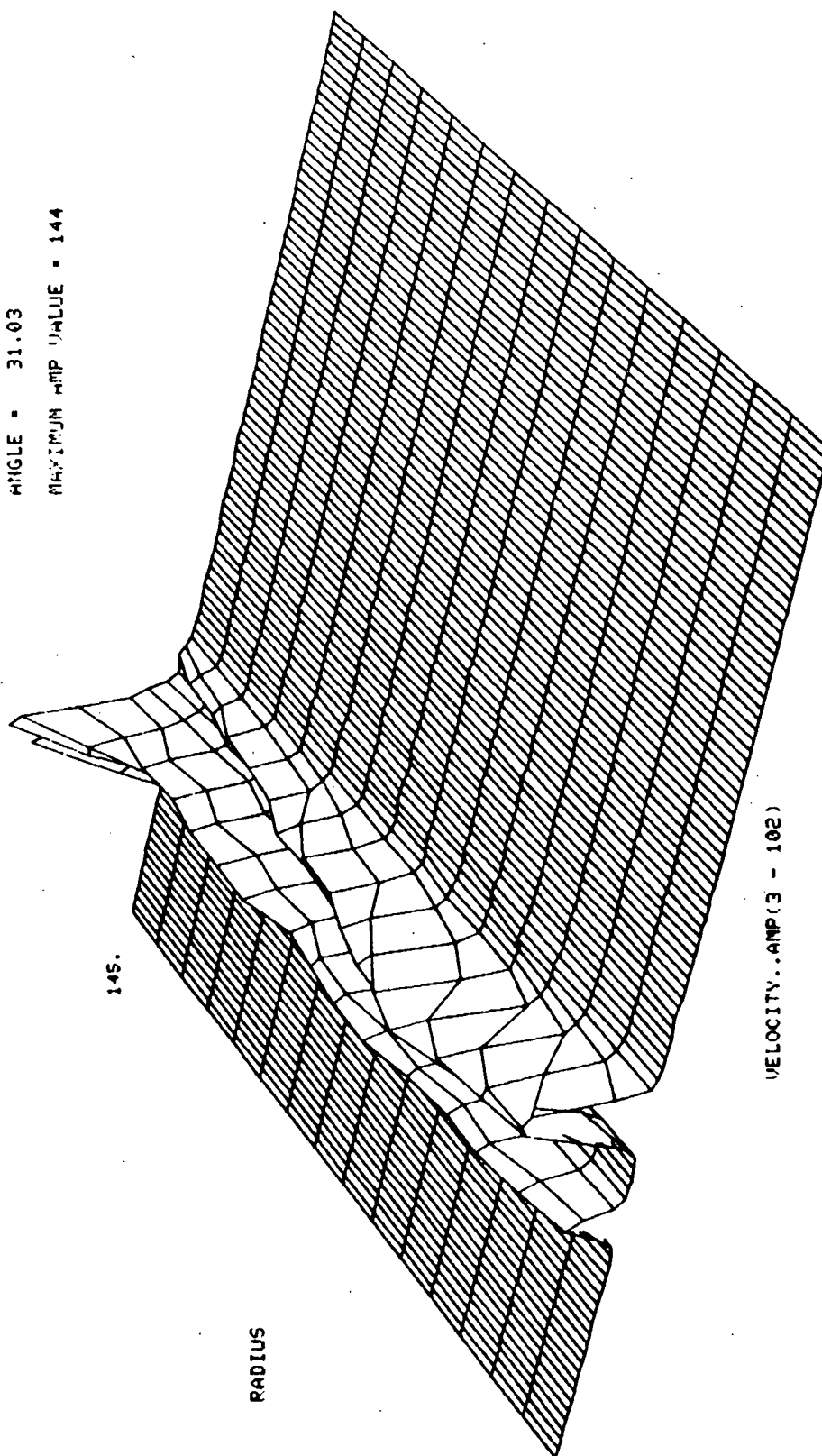
R
 1 145.7
 2 156.1
 3 166.4
 4 176.8
 5 187.1
 6 197.4
 7 207.8
 8 218.1
 9 228.4
 10 238.8
 11 249.1
 12 259.5
 13 269.8
 14 280.1
 15 300.6



I, R, A DISPLAY AT VELOCITY CELL 34

FINAL PAGE IS
 FOR QUALITY

NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 15 FRAME # 10839 ANGLE 9.153 TO FRAME # 11456 ANGLE 64.552 CRITICAL AMP AT CELL 34
 FRAME # 11089 TO 11105
 ANGLE = 31.03
 MAXIMUM AMP VALUE = 144



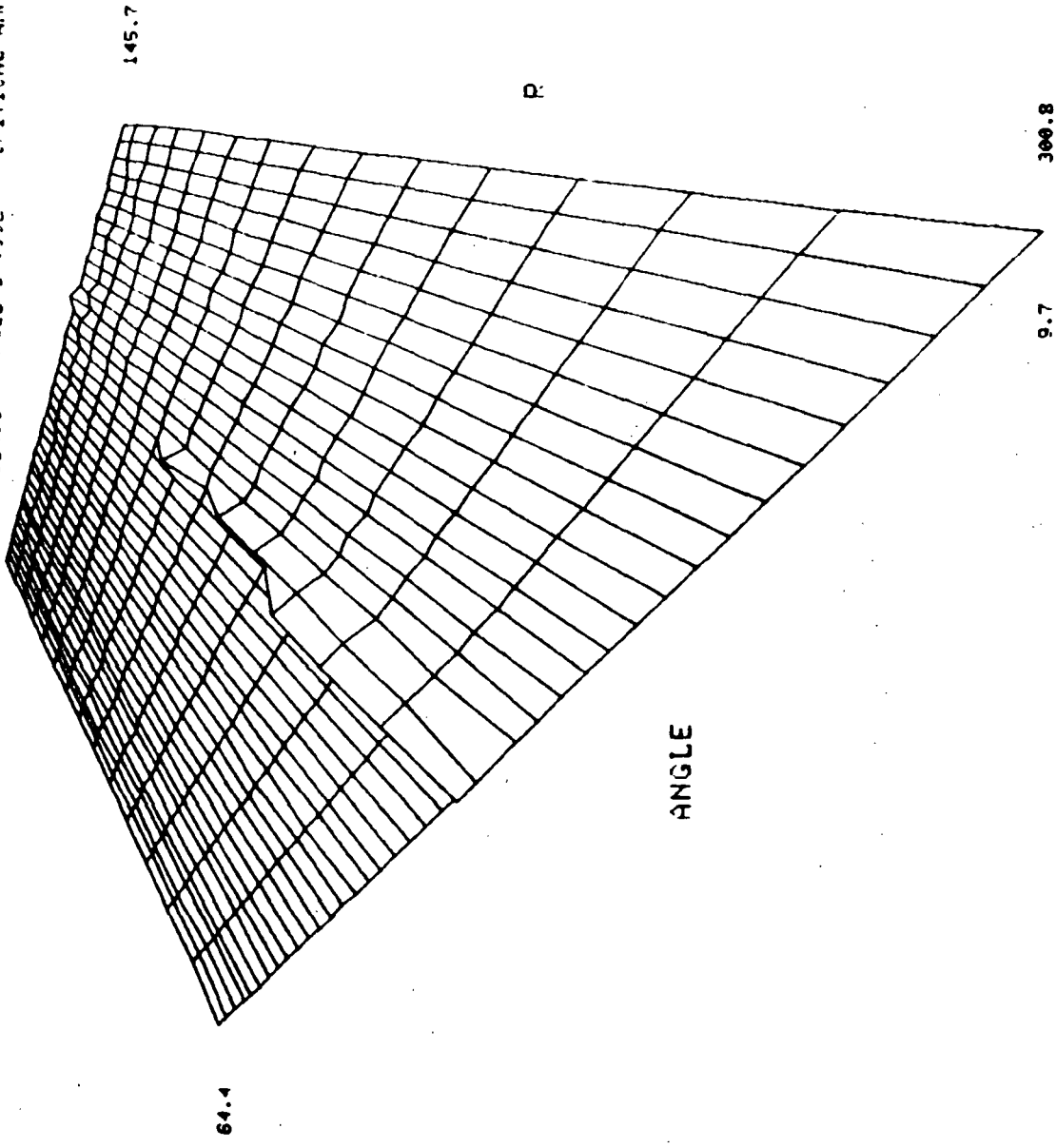
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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TARE 1 OF 2-20832
SCAN # 15 FRAME # 10839 ANGLE 9.128 TO FRAME # 11456 ANGLE 64.553 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 40.0
AVERAGE U - 26.7

ANGLE
1 9.7
2 10.1
3 10.9
4 11.8
5 13.2
6 14.5
7 16.0
8 17.5
9 19.0
10 20.4
11 21.9
12 23.4
13 24.9
14 26.4
15 28.0
16 29.4
17 31.0
18 32.5
19 33.9
20 35.5
21 36.9
22 38.4
23 39.8
24 41.3
25 42.8
26 44.2
27 45.7
28 47.2
29 48.6
30 50.0
31 51.5
32 53.0
33 54.5
34 56.0
35 57.5
36 59.0
37 60.5
38 62.0
39 63.4
40 64.4



R
1 145.7
2 156.1
3 166.4
4 176.8
5 187.1
6 197.4
7 207.8
8 218.1
9 228.4
10 238.9
11 249.1
12 259.5
13 269.8
14 280.1
15 300.3

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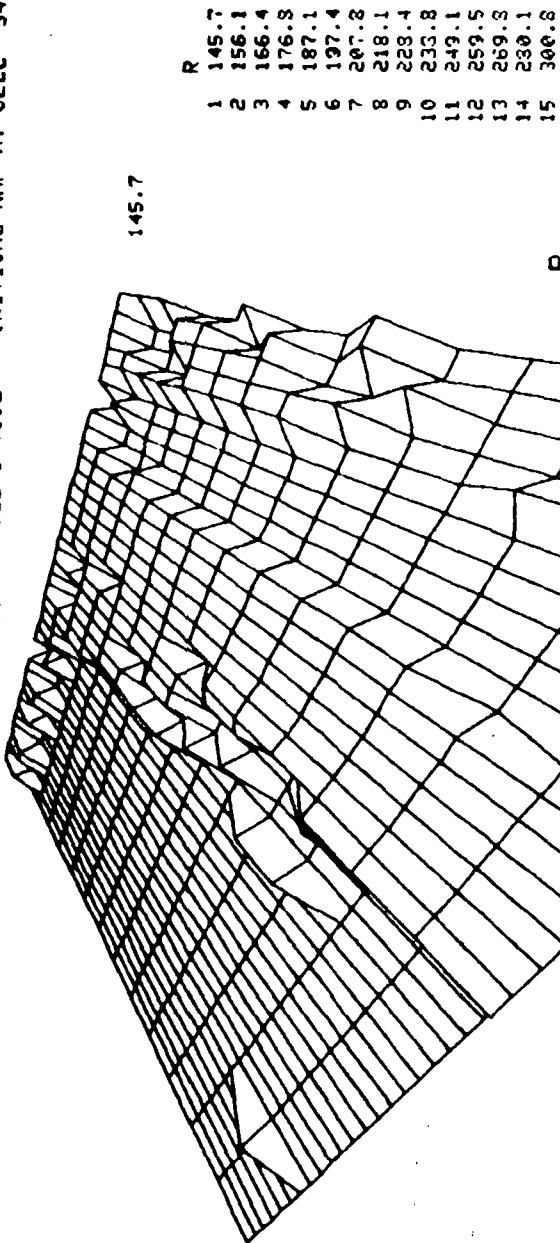
U, R, A DISPLAY (VELOCITY AT I_max)

NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 15 FRAME # 10839 ANGLE 9.138 TO FRAME # 11456 ANGLE 64.552 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 40.0
 AVERAGE U - 10.8

ANGLE
 1 9.7
 2 10.1
 3 10.9
 4 11.8
 5 13.2
 6 14.5
 7 15.0
 8 17.5
 9 19.0
 10 20.4
 11 21.9
 12 23.4
 13 24.9
 14 26.4
 15 28.0
 16 29.4
 17 31.0
 18 32.5
 19 33.9
 20 35.5
 21 36.9
 22 38.4
 23 39.8
 24 41.3
 25 42.8
 26 44.2
 27 45.7
 28 47.2
 29 48.6
 30 50.0
 31 51.5
 32 53.0
 33 54.5
 34 56.0
 35 57.5
 36 59.0
 37 60.5
 38 62.0
 39 63.4
 40 64.4

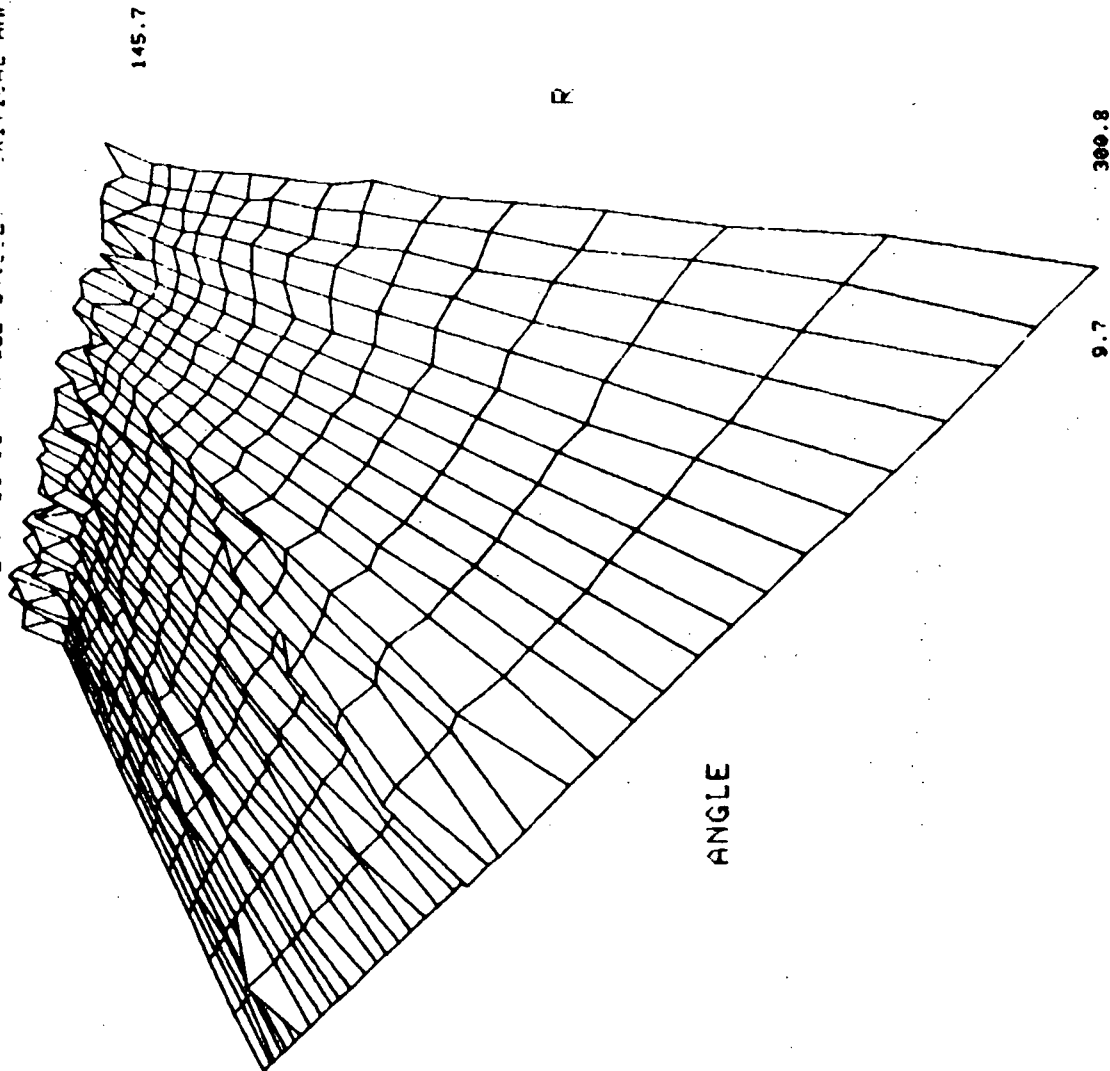


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Umax, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
SCAN # 15 FRAME # 10839 ANGLE 9.192 TO FRAME # 11456 ANGLE 64.552 CRITICAL AMP AT CELL 34
OPTION # 31



ANGLE
1 9.7
2 10.1
3 10.9
4 11.8
5 13.2
6 14.5
7 16.0
8 17.5
9 19.0
10 20.4
11 21.9
12 23.4
13 24.9
14 26.4
15 28.0
16 29.4
17 31.0
18 32.5
19 33.9
20 35.5
21 36.9
22 38.4
23 39.8
24 41.3
25 42.8
26 44.2
27 45.7
28 47.2
29 48.6
30 50.0
31 51.5
32 53.0
33 54.5
34 56.0
35 57.5
36 59.0
37 60.5
38 62.0
39 63.4
40 64.4

U X Imax, R, A DISPLAY

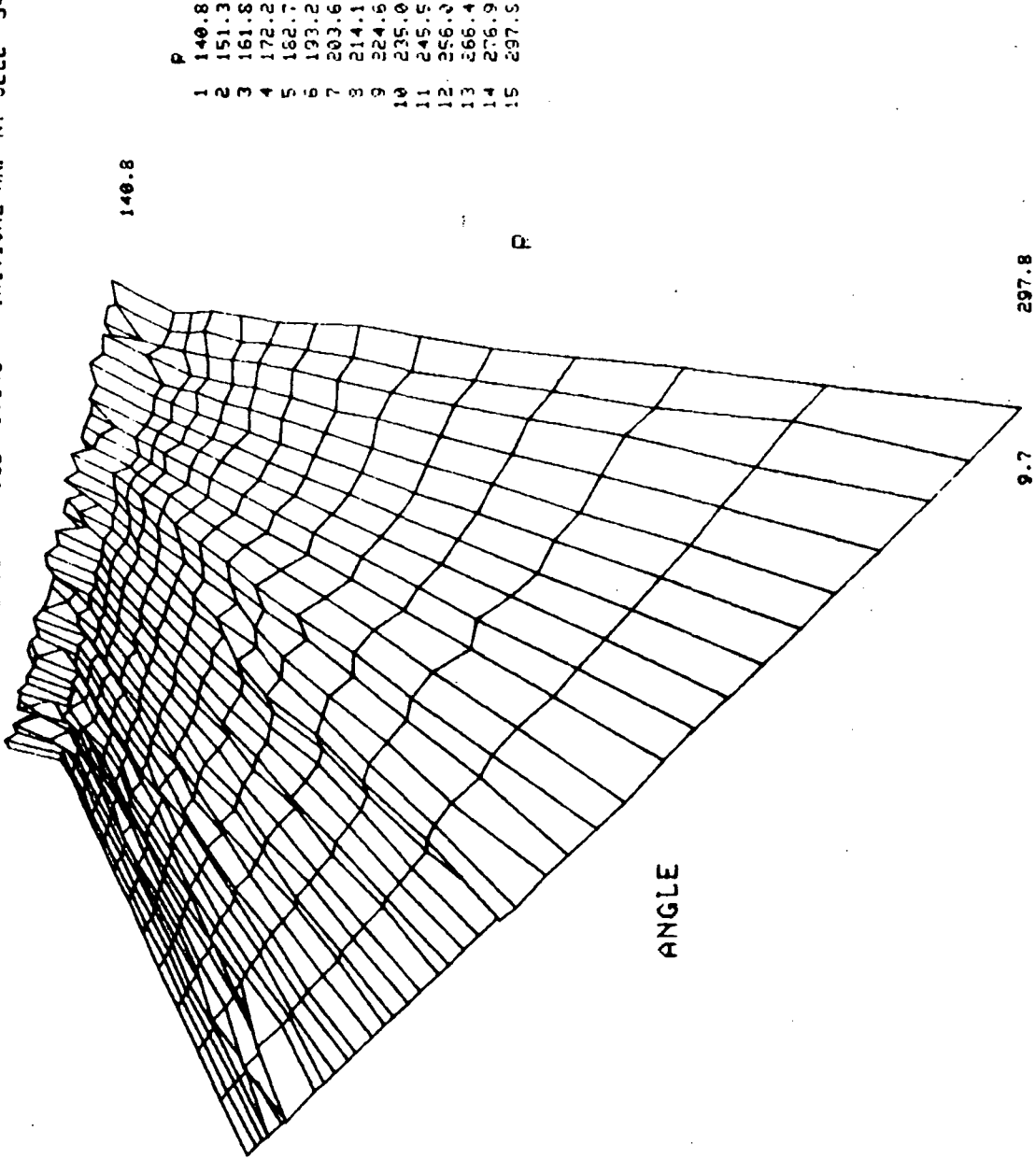
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20833
SCAN # 16 FRAME # 11456 ANGLE 64.552 TO FRAME # 12091 ANGLE 9.143 CRITICAL AMP WT CELL 34

OPTION # 11

MAXIMUM I - 167.0

AVERAGE I - 58.0

ANGLE
1 64.3
2 64.3
3 63.9
4 63.1
5 62.0
6 60.8
7 59.4
8 57.9
9 56.4
10 54.9
11 53.3
12 51.9
13 50.3
14 48.9
15 47.5
16 46.0
17 44.5
18 43.1
19 41.6
20 40.1
21 38.6
22 37.2
23 35.8
24 34.2
25 32.7
26 31.3
27 29.7
28 28.3
29 26.8
30 25.2
31 23.7
32 22.1
33 20.6
34 19.1
35 17.7
36 16.1
37 14.6
38 13.1
39 11.6
40 10.3
41 9.7



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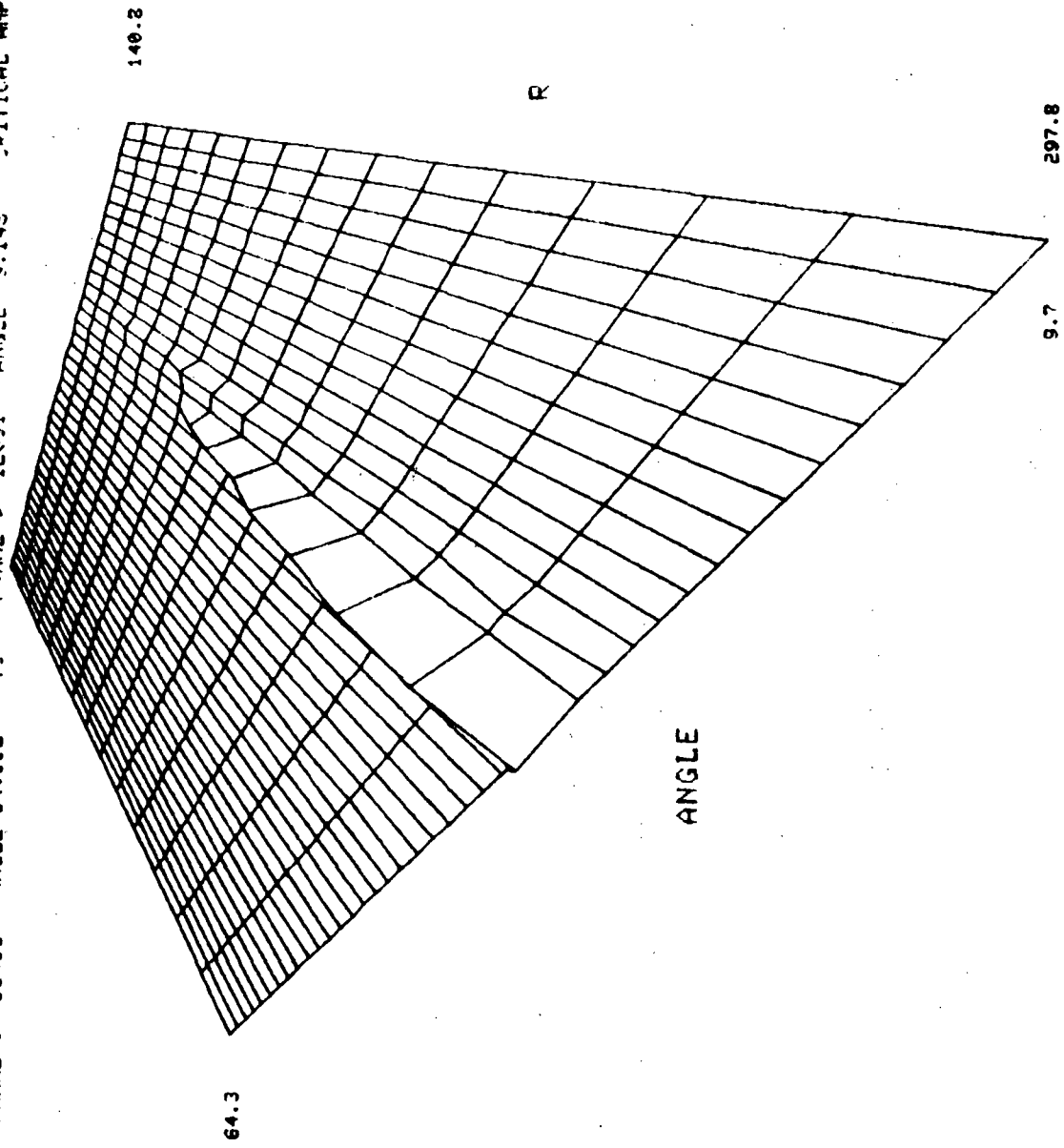
Imax, P, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
SCAN # 16 FRAME # 11456 ANGLE 64.552 TO FRAME # 12031 ANGLE 9.143 OPTICAL WMP AT CELL 34

OPTION # 12

MAXIMUM I - 124.0
AVERAGE I - 2.1

R	
1	140.8
2	151.3
3	161.8
4	172.2
5	182.7
6	193.2
7	203.6
8	214.1
9	224.6
10	235.0
11	245.5
12	256.0
13	266.4
14	276.9
15	297.3

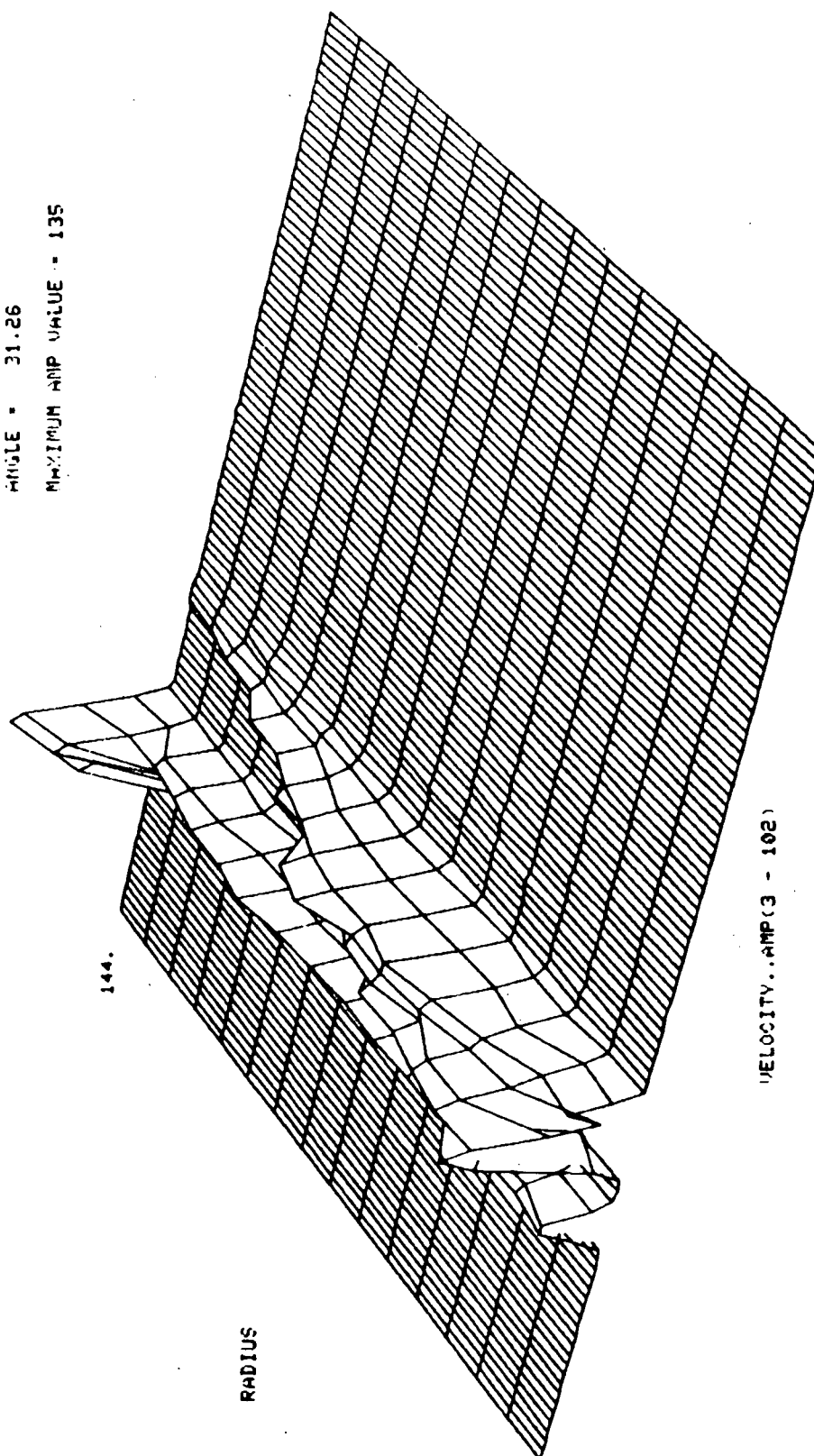


ANGLE	
1	64.3
2	64.3
3	63.9
4	63.1
5	62.0
6	60.8
7	59.4
8	57.9
9	56.4
10	54.9
11	53.3
12	51.9
13	50.3
14	48.9
15	47.5
16	46.0
17	44.5
18	43.1
19	41.6
20	40.1
21	38.6
22	37.2
23	35.8
24	34.2
25	32.7
26	31.3
27	29.7
28	28.3
29	26.8
30	25.2
31	23.7
32	22.1
33	20.6
34	19.1
35	17.7
36	16.1
37	14.6
38	13.1
39	11.6
40	10.3
41	9.7

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I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-203S9
SCAN # 16 FRAME # 11456 ANGLE 64.552 TO FRAME # 12031 ANGLE 3.148 CRITICAL AMP AT CELL 34
FRAME # 11840 TO 11856
ANGLE - 31.26
MAXIMUM AMP VALUE - 135

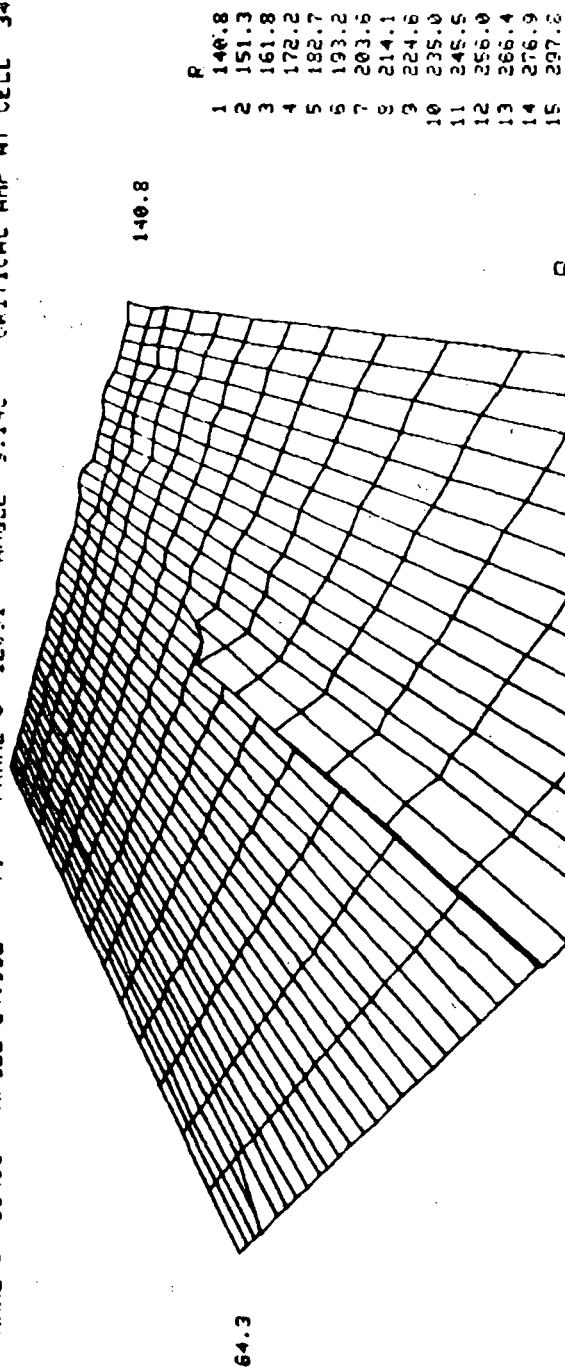


NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20283
 SCAN # 16 FRAME # 11456 ANGLE 64.552 TO FRAME # 12091 ANGLE 9.145 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 39.0

AVERAGE U - 26.5



ANGLE

1	64.3
2	64.3
3	63.9
4	63.1
5	62.0
6	60.8
7	59.4
8	57.9
9	56.4
10	54.9
11	53.3
12	51.9
13	50.3
14	48.9
15	47.5
16	46.0
17	44.5
18	43.1
19	41.6
20	40.1
21	38.6
22	37.2
23	35.8
24	34.2
25	32.7
26	31.3
27	29.7
28	28.3
29	26.8
30	25.2
31	23.7
32	22.1
33	20.6
34	19.1
35	17.7
36	16.1
37	14.6
38	13.1
39	11.6
40	10.3
41	9.7

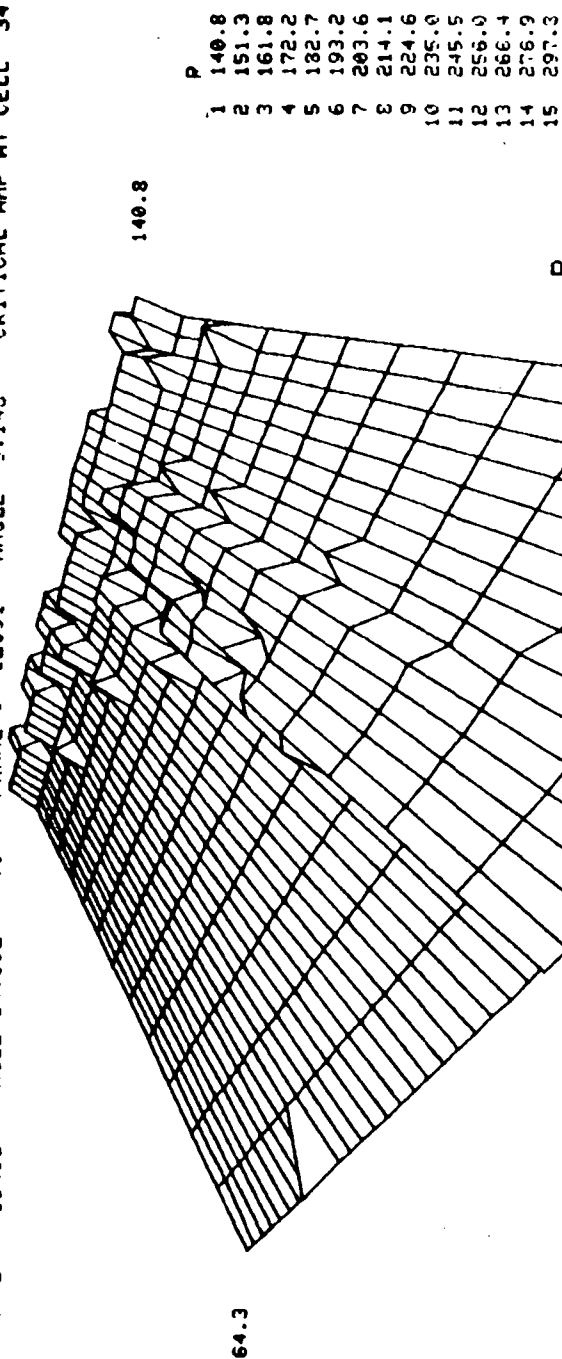
U, R, A DISPLAY (VELOCITY AT I MAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20883
 * SCAN # 16 FRAME # 11456 ANGLE 64.552 TO FRAME # 12091 ANGLE 9.143 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U = 39.0

AVERAGE U = 7.7

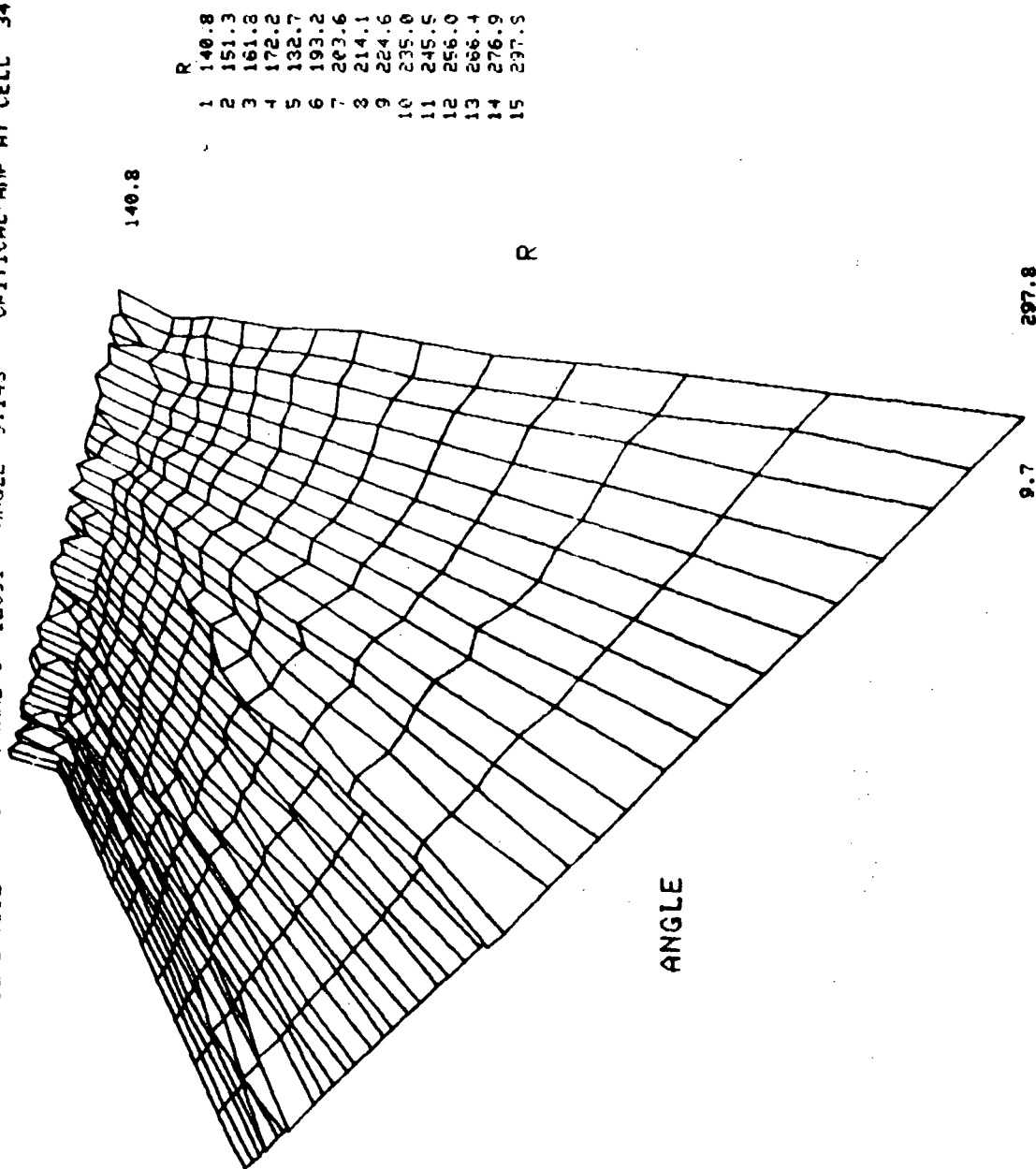


ANGLE
 1 64.3
 2 64.3
 3 63.9
 4 63.1
 5 62.0
 6 60.8
 7 59.4
 8 57.9
 9 56.4
 10 54.9
 11 53.3
 12 51.9
 13 50.3
 14 48.9
 15 47.5
 16 46.0
 17 44.5
 18 43.1
 19 41.6
 20 40.1
 21 38.6
 22 37.2
 23 35.8
 24 34.2
 25 32.7
 26 31.3
 27 29.7
 28 28.3
 29 26.8
 30 25.2
 31 23.7
 32 22.1
 33 20.6
 34 19.1
 35 17.7
 36 16.1
 37 14.6
 38 13.1
 39 11.6
 40 10.3
 41 9.7

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U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20883
 SCAN # 16 FRAME # 11456 ANGLE 64.552 TO FRAME # 12091 ANGLE 9.143 CRITICAL AMP AT CELL 34
 OPTION # 31



R
 1 140.8
 2 151.3
 3 161.8
 4 172.2
 5 182.7
 6 193.2
 7 203.6
 8 214.1
 9 224.6
 10 235.0
 11 245.5
 12 256.0
 13 266.4
 14 276.9
 15 287.3

ANGLE
 1 64.3
 2 64.3
 3 63.9
 4 63.1
 5 62.0
 6 60.8
 7 59.4
 8 57.9
 9 56.4
 10 54.9
 11 53.3
 12 51.9
 13 50.3
 14 48.9
 15 47.5
 16 46.0
 17 44.5
 18 43.1
 19 41.6
 20 40.1
 21 38.6
 22 37.2
 23 35.8
 24 34.2
 25 32.7
 26 31.3
 27 29.7
 28 28.3
 29 26.8
 30 25.2
 31 23.7
 32 22.1
 33 20.6
 34 19.1
 35 17.7
 36 16.1
 37 14.6
 38 13.1
 39 11.6
 40 10.3
 41 9.7

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U * Imax, R, A DISPLAY

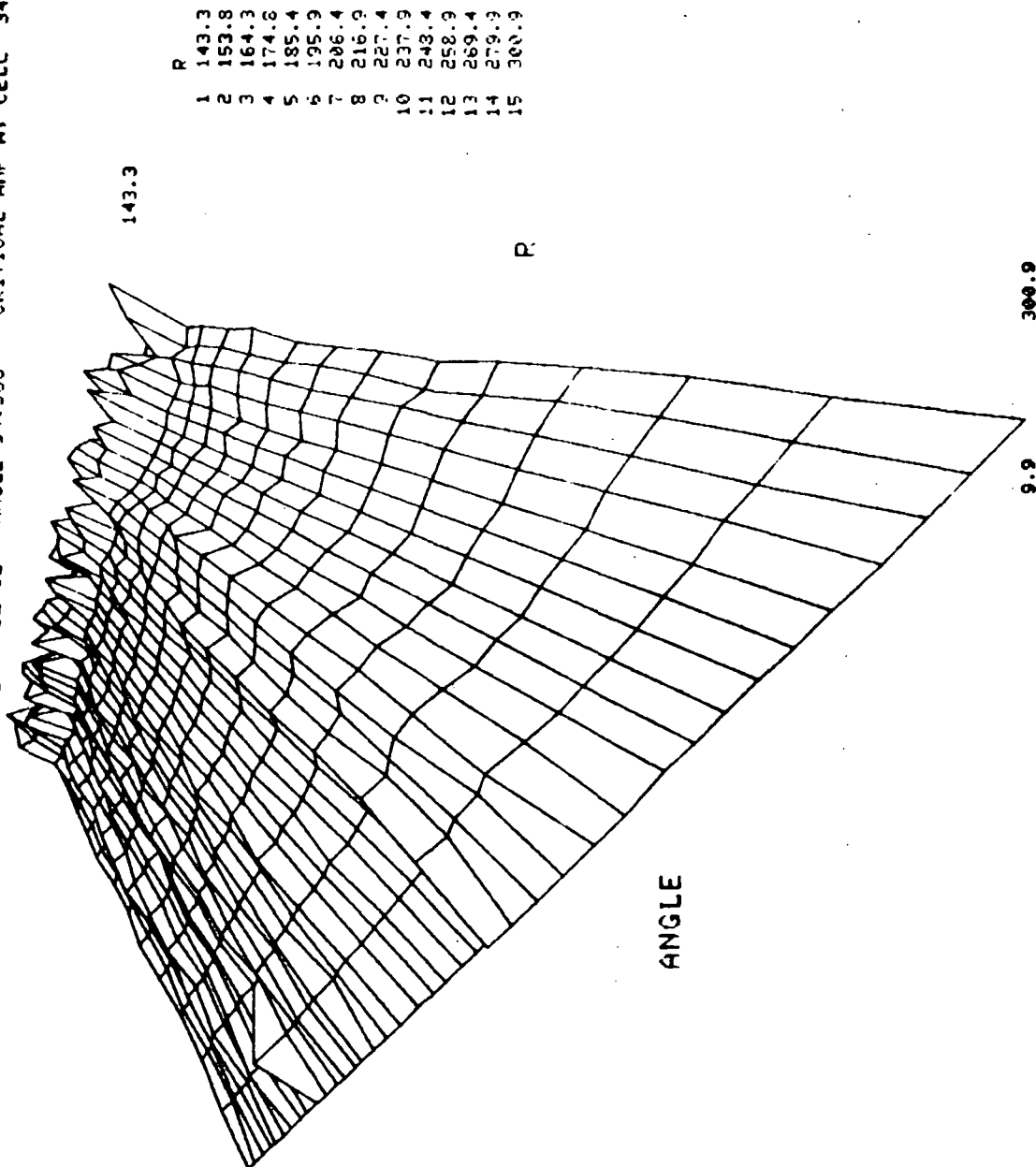
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20289
 SCAN # 17 FRAME # 12091 ANGLE 9.145 TO FRAME # 12712 ANGLE 54.566 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 163.0

AVERAGE I - 68.2

ANGLE
1 9.9
2 10.5
3 11.4
4 12.6
5 13.8
6 15.3
7 16.8
8 18.3
9 19.8
10 21.2
11 22.7
12 24.3
13 25.8
14 27.3
15 28.8
16 30.2
17 31.7
18 33.3
19 34.7
20 36.2
21 37.7
22 39.2
23 40.7
24 42.1
25 43.6
26 44.9
27 46.5
28 47.9
29 49.4
30 50.9
31 52.3
32 53.8
33 55.3
34 56.8
35 58.2
36 59.8
37 61.4
38 62.8
39 63.9
40 64.5



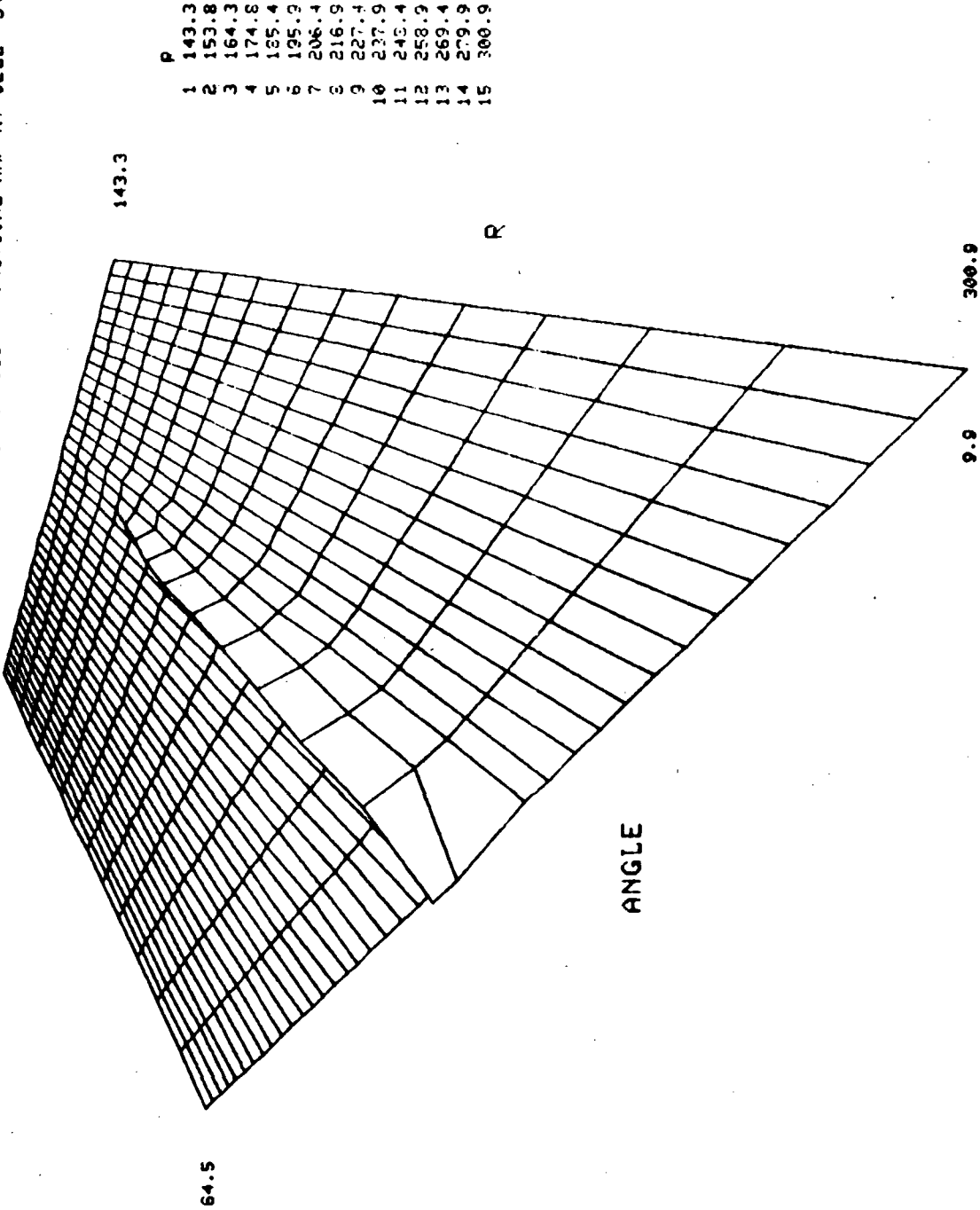
Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20883
 SCAN # 17 FRAME # 12091 ANGLE 9.143 TO FRAME # 12712 ANGLE 64.568 CRITICAL AMP AT CELL 34

OPTION # 12

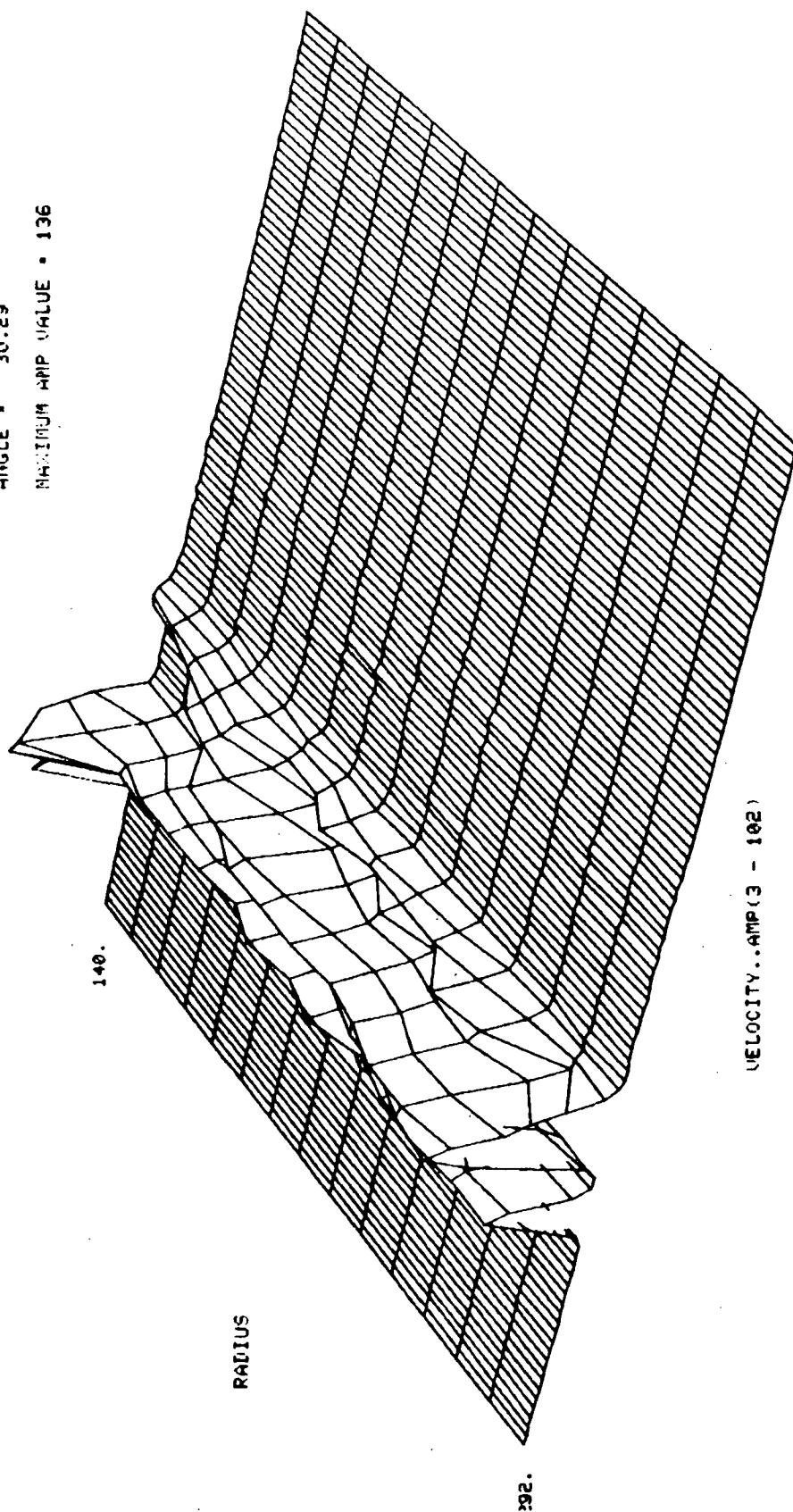
MAXIMUM I - 136.0
 AVERAGE I - 3.6

- ANGLE
- 1 9.9
 - 2 10.5
 - 3 11.4
 - 4 12.6
 - 5 13.8
 - 6 15.3
 - 7 16.8
 - 8 18.3
 - 9 19.8
 - 10 21.2
 - 11 22.7
 - 12 24.3
 - 13 25.8
 - 14 27.3
 - 15 28.9
 - 16 30.2
 - 17 31.7
 - 18 33.3
 - 19 34.7
 - 20 36.2
 - 21 37.7
 - 22 39.2
 - 23 40.7
 - 24 42.1
 - 25 43.6
 - 26 44.9
 - 27 46.5
 - 28 47.9
 - 29 49.4
 - 30 50.9
 - 31 52.3
 - 32 53.8
 - 33 55.3
 - 34 56.8
 - 35 58.2
 - 36 59.8
 - 37 61.4
 - 38 62.8
 - 39 63.9
 - 40 64.5



I, R, A DISPLAY AT VELOCITY CELL 34

* NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 * SCAN # 17 FRAME # 12091 ANGLE 9.148 TO FRAME # 12712 ANGLE 64.568 CRITICAL AMP AT CELL 34
 FRAME # 12326 TO 12341
 ANGLE = 30.29
 MAXIMUM AMP VALUE = 136



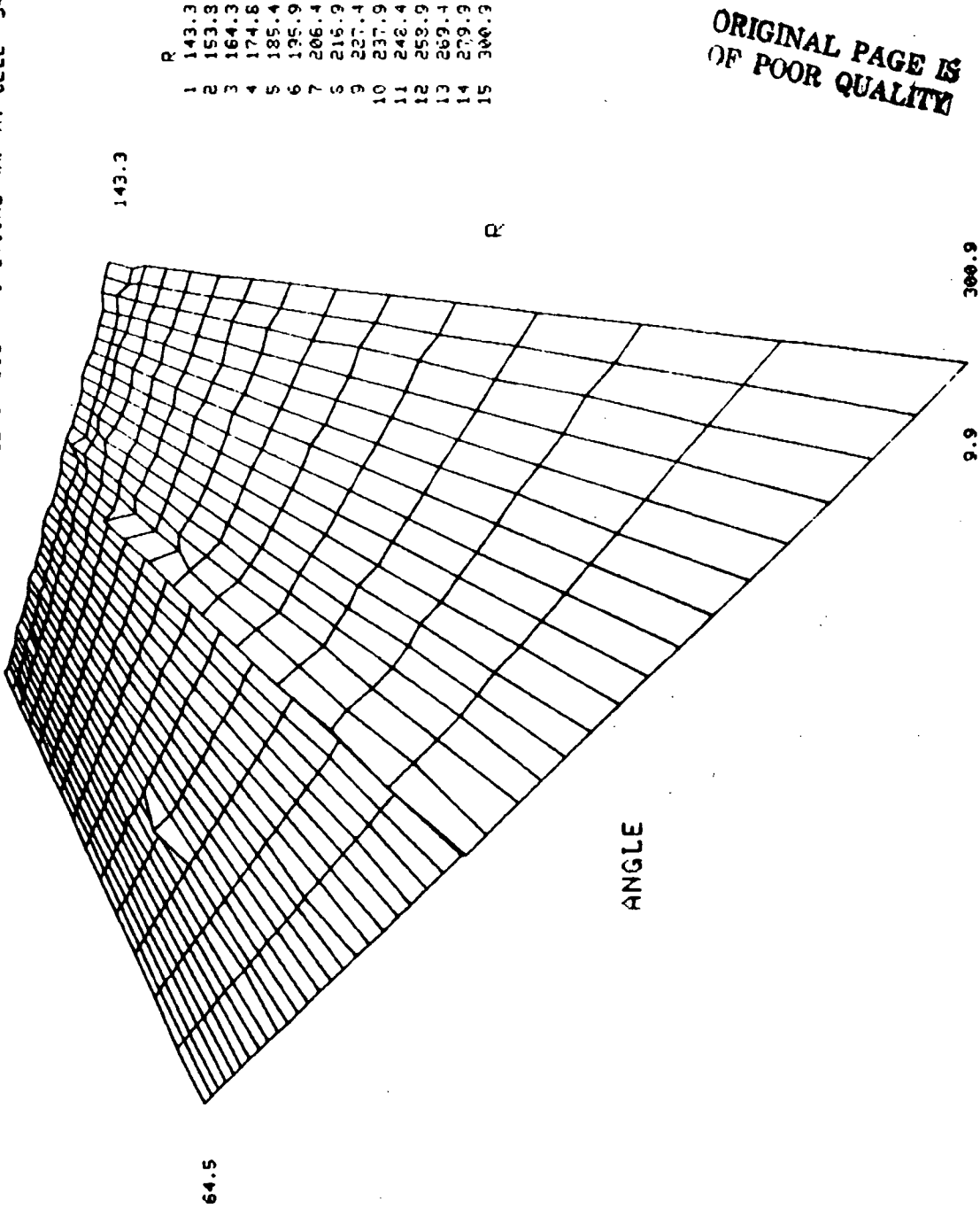
NASA PROJECT DUST DEVI DAY 206 RUN # 17 TAPR 1 OF 2-20383
SCAN # 17 FRAME # 12091 ANGLE 9.148 TO FRAME # 12112 ANGLE 64.563 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 36.0

AVERAGE U - 26.7

ANGLE
1 9.9
2 10.5
3 11.4
4 12.6
5 13.8
6 15.3
7 16.8
8 18.3
9 19.8
10 21.2
11 22.7
12 24.3
13 25.8
14 27.3
15 28.8
16 30.2
17 31.7
18 33.3
19 34.7
20 36.2
21 37.7
22 39.2
23 40.7
24 42.1
25 43.6
26 44.9
27 46.5
28 47.9
29 49.4
30 50.9
31 52.3
32 53.8
33 55.3
34 56.8
35 58.2
36 59.8
37 61.4
38 62.8
39 63.9
40 64.5



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U, R, A DISPLAY (VELOCITY AT I_{MAX})

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 17 FRAME # 12091 ANGLE 9.148 TO FRAME # 12712 ANGLE 64.563 CRITICAL AMP AT CELL 34

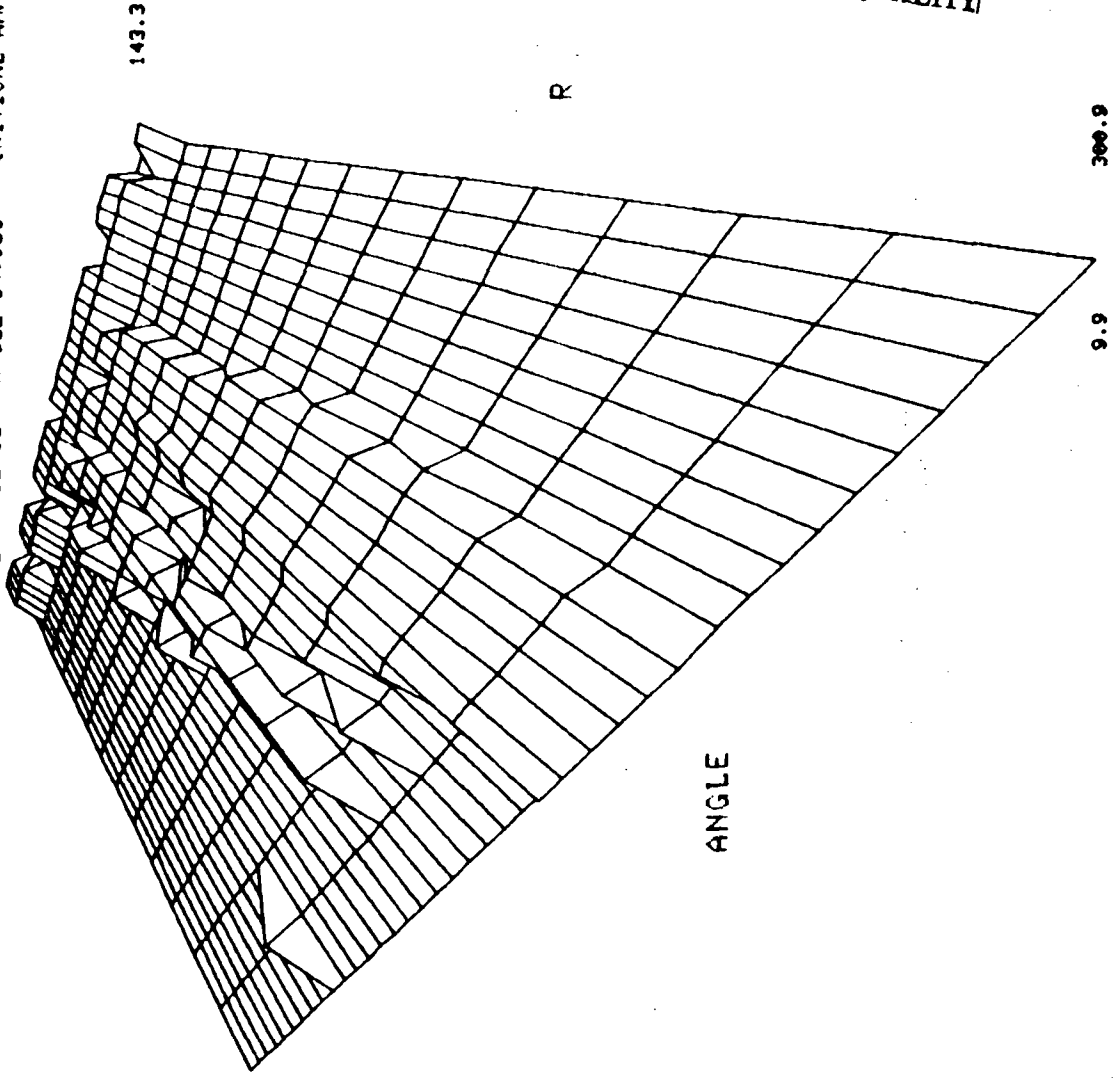
OPTION # 22

MAXIMUM U = 37.0

AVERAGE U = 10.6

ANGLE	
1	9.9
2	10.5
3	11.4
4	12.6
5	13.8
6	15.3
7	16.8
8	18.3
9	19.8
10	21.2
11	22.7
12	24.3
13	25.8
14	27.3
15	28.8
16	30.2
17	31.7
18	33.3
19	34.7
20	36.2
21	37.7
22	39.2
23	40.7
24	42.1
25	43.6
26	44.9
27	46.5
28	47.9
29	49.4
30	50.9
31	52.3
32	53.8
33	55.3
34	56.8
35	58.2
36	59.8
37	61.4
38	62.8
39	63.9
40	64.5

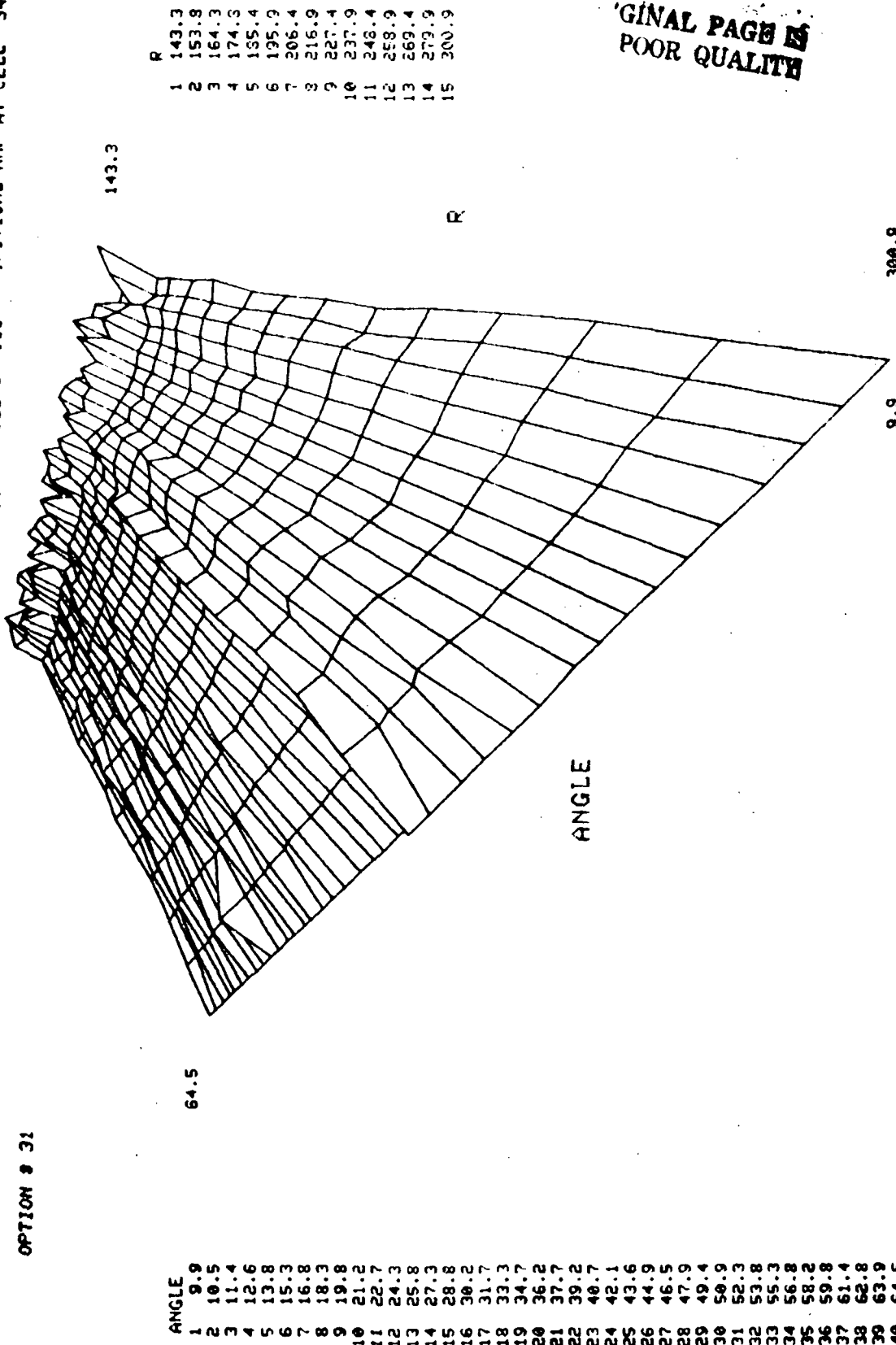
R	
1	143.3
2	153.8
3	164.3
4	174.8
5	185.4
6	195.9
7	206.4
8	216.9
9	227.4
10	237.9
11	248.4
12	258.9
13	269.4
14	279.9
15	300.9



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U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 THPE 1 OF 2-20389
 SCAN # 17 FRAME # 12091 ANGLE 9.142 TO FRAME # 12716 ANGLE 64.503 CRITICAL AMP AT CELL 34
 OPTION # 31



U X IMAX, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 556 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 18 FRAME # 12712 ANGLE 64.568 TO FRAME # 13325 ANGLE 2.543 CRITICAL AMP AT CELL 34

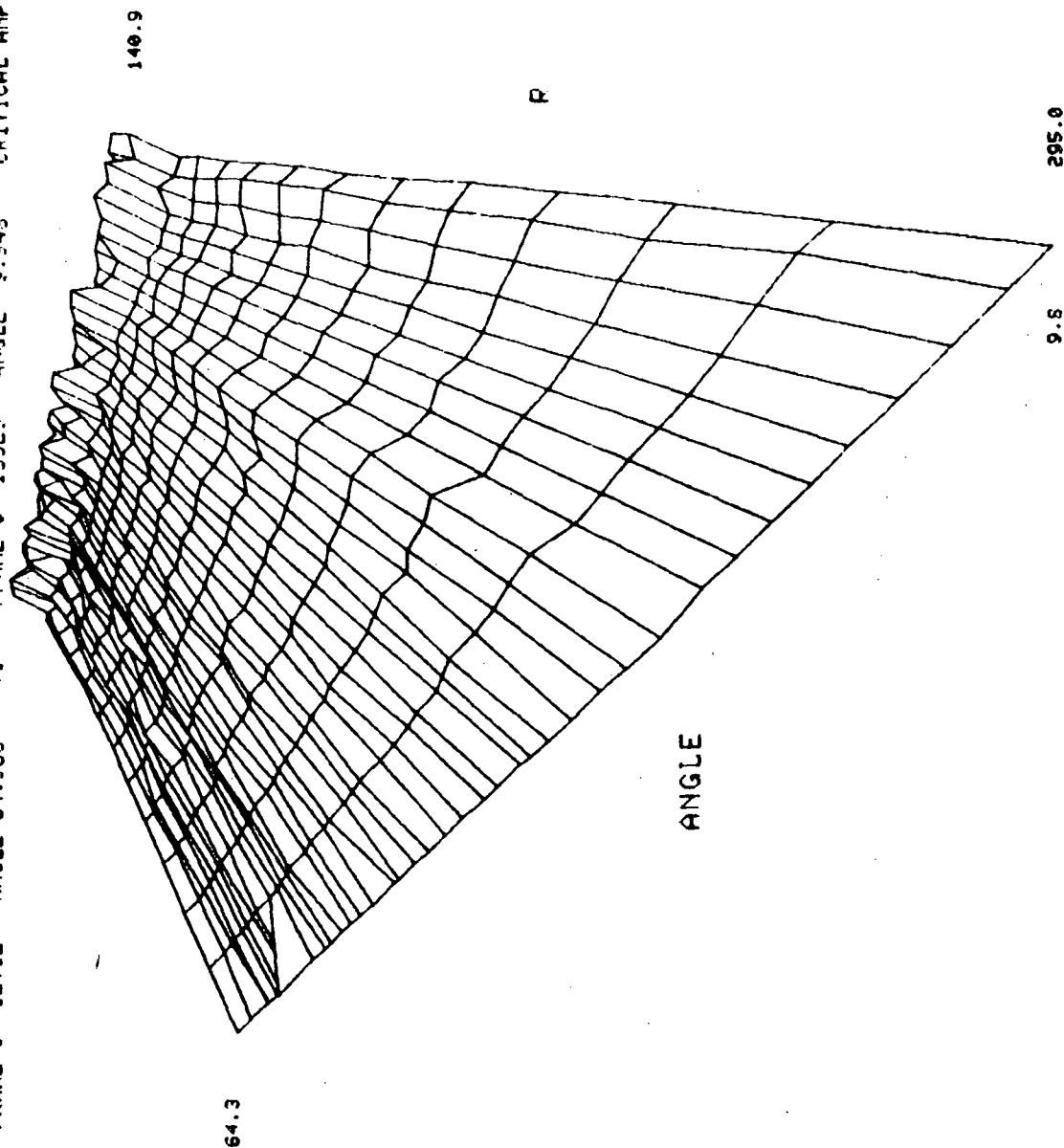
OPTION # 11

MAXIMUM I - 169.0

AVERAGE I - 74.2

ANGLE
 1 64.3
 2 64.1
 3 63.5
 4 62.5
 5 61.4
 6 60.0
 7 58.5
 8 57.1
 9 55.6
 10 54.0
 11 52.5
 12 51.1
 13 49.5
 14 48.1
 15 46.7
 16 45.2
 17 43.6
 18 42.3
 19 40.8
 20 39.3
 21 37.8
 22 36.4
 23 34.9
 24 33.4
 25 31.9
 26 30.4
 27 28.9
 28 27.4
 29 25.9
 30 24.4
 31 22.8
 32 21.4
 33 19.9
 34 18.3
 35 16.8
 36 15.3
 37 13.8
 38 12.2
 39 10.8
 40 9.8

R
 1 140.9
 2 152.0
 3 163.0
 4 174.0
 5 185.0
 6 196.0
 7 207.0
 8 218.0
 9 229.0
 10 240.0
 11 251.0
 12 262.0
 13 273.0
 14 285.0



Imax, R, A DISPLAY

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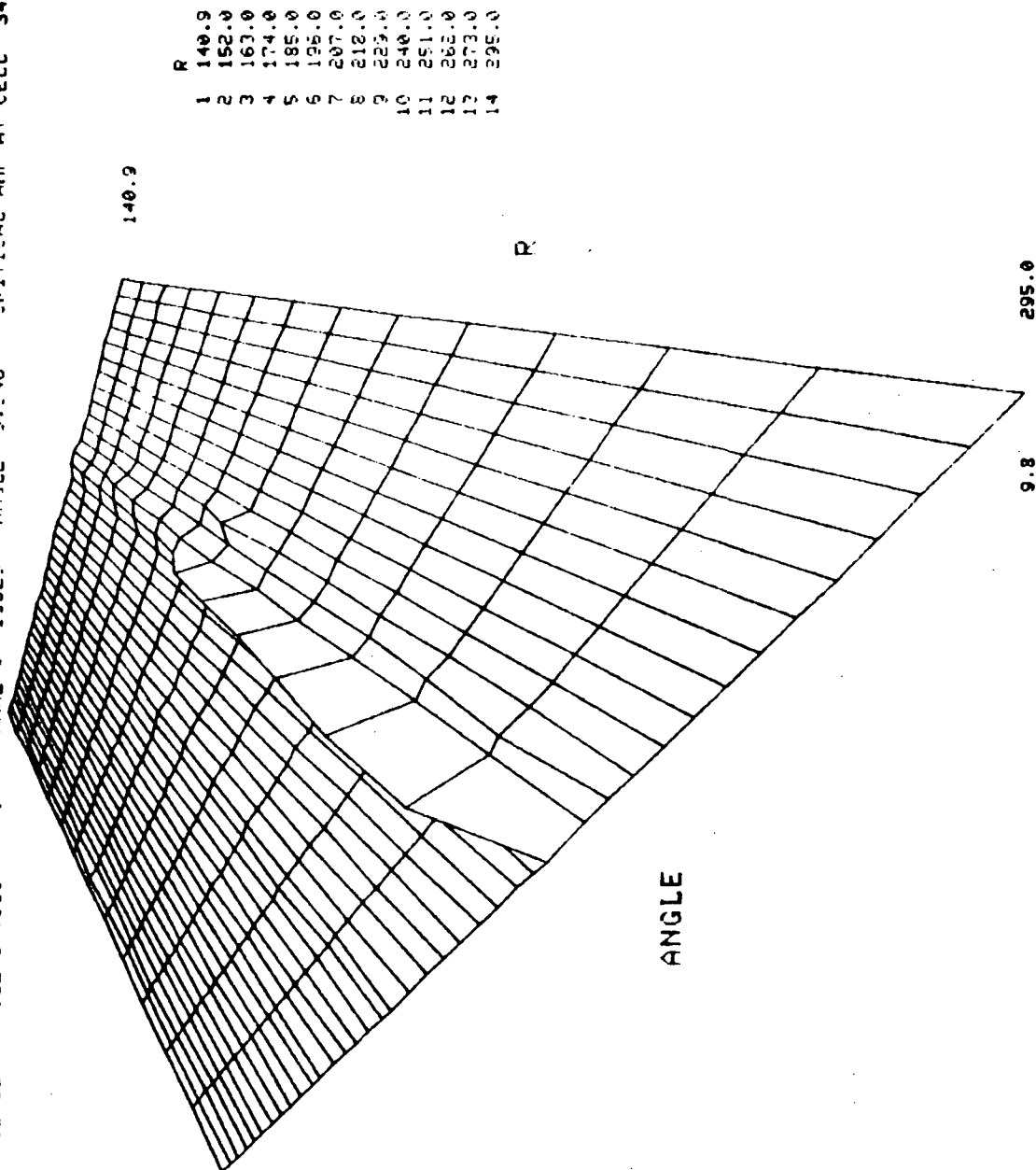
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TYPE 1 OF 2-20889
 SCAN # 18 FRAME # 12712 ANGLE 64.568 TO FRAME # 13325 ANGLE 9.548 CRITICAL AMP WT CELL 34

OPTION # 12

MAXIMUM I - 97.0

AVERAGE I - 3.1

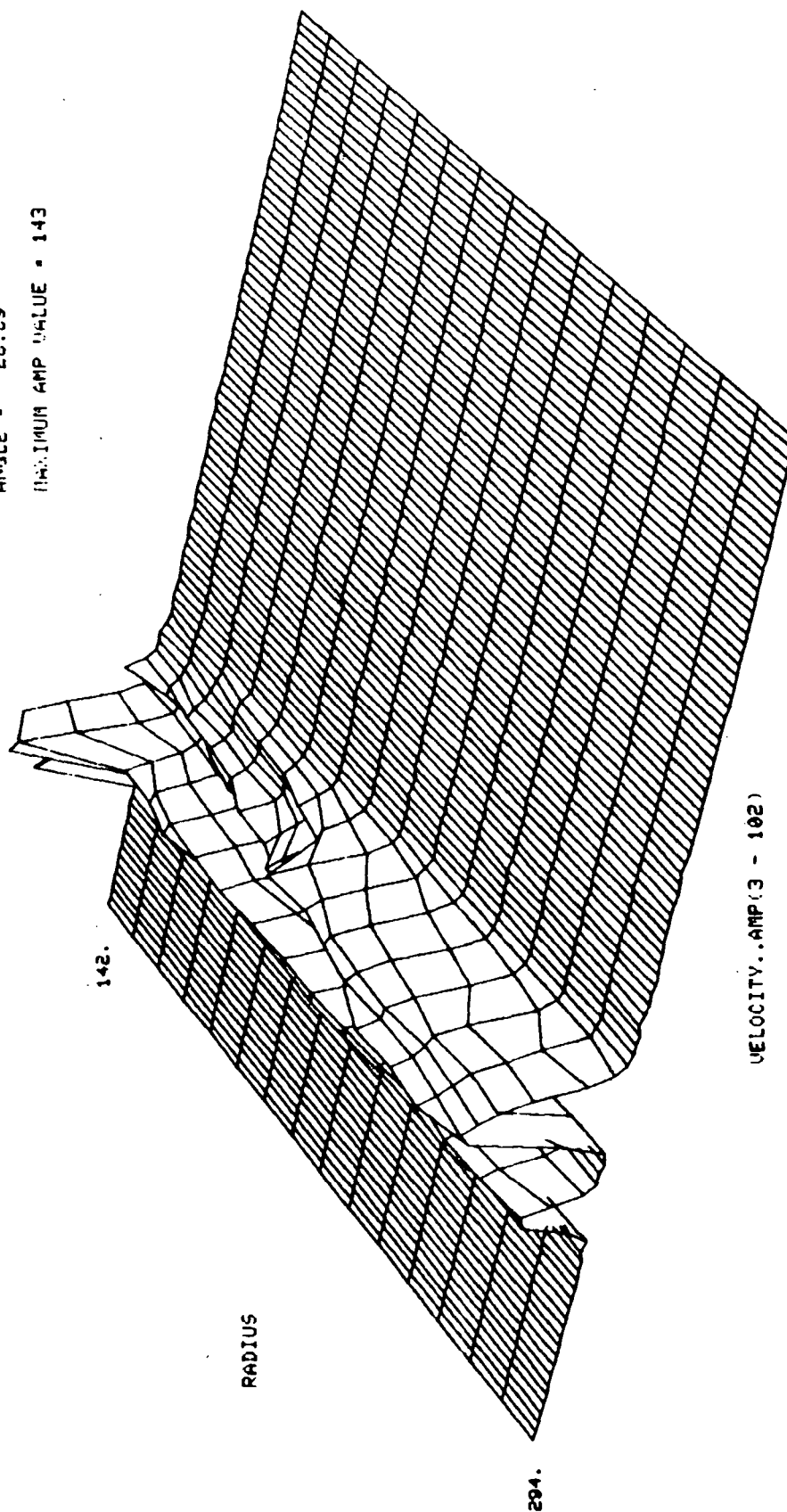
ANGLE
 1 64.3
 2 64.1
 3 63.5
 4 62.5
 5 61.4
 6 60.0
 7 58.5
 8 57.1
 9 55.6
 10 54.0
 11 52.5
 12 51.1
 13 49.5
 14 48.1
 15 46.7
 16 45.2
 17 43.8
 18 42.3
 19 40.8
 20 39.3
 21 37.8
 22 36.4
 23 34.9
 24 33.4
 25 31.9
 26 30.4
 27 28.9
 28 27.4
 29 25.9
 30 24.4
 31 22.8
 32 21.4
 33 19.9
 34 18.3
 35 16.8
 36 15.3
 37 13.8
 38 12.2
 39 10.8
 40 9.8



R
 1 140.9
 2 152.0
 3 163.0
 4 174.0
 5 185.0
 6 196.0
 7 207.0
 8 218.0
 9 229.0
 10 240.0
 11 251.0
 12 262.0
 13 273.0
 14 284.0

I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20829
SCAN # 18 FRAME # 12712 ANGLE 64.568 TO FRAME # 13325 ANGLE 9.548 CRITICAL AMP AT CELL 34
FRAME # 13108 TO 13124
ANGLE = 28.89
MAXIMUM AMP VALUE = 143



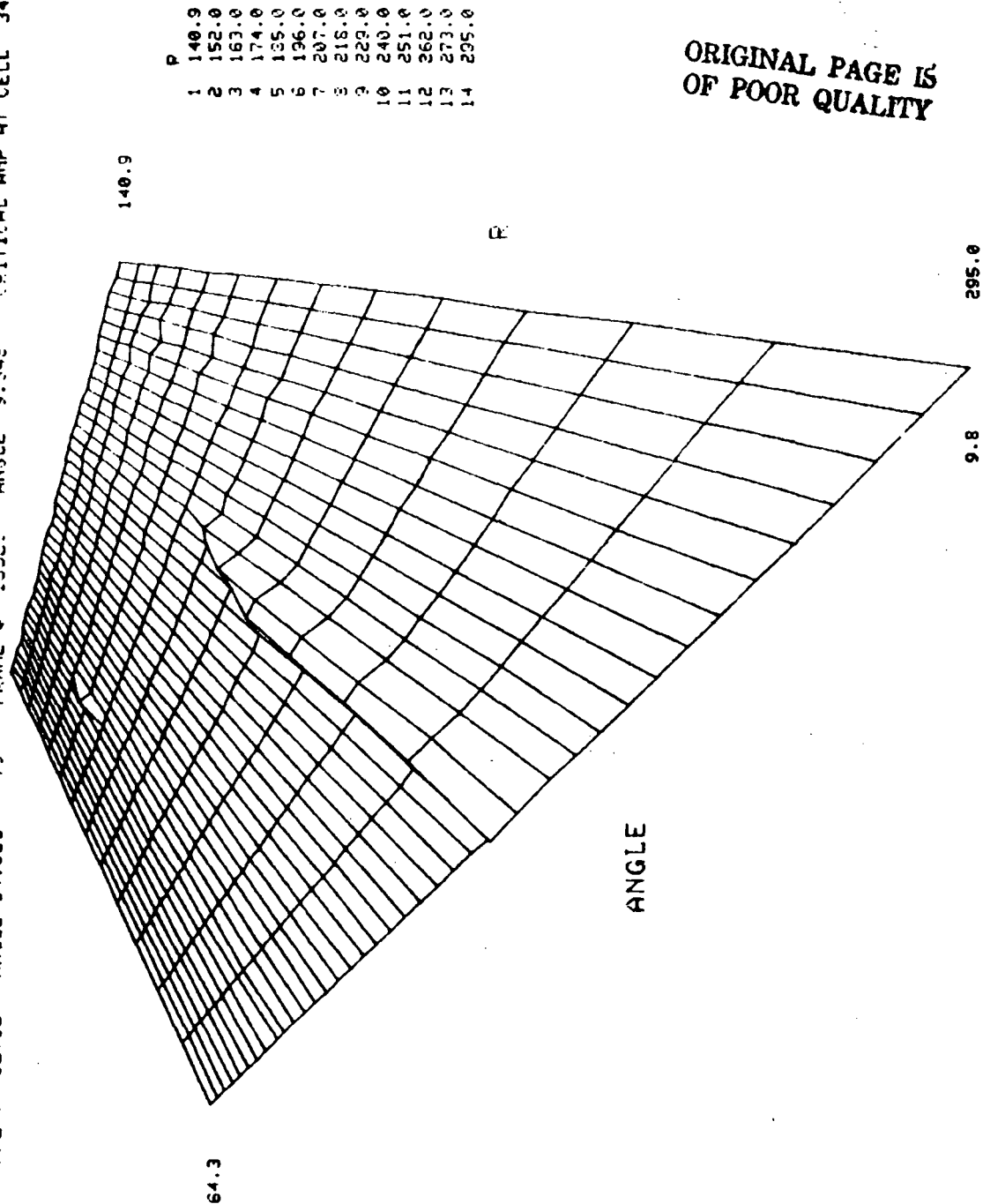
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAP 1 OF 2-20333
 * SCAN # 18 FRAME # 12712 ANGLE 64.563 TO FRAME # 13325 ANGLE 9.548 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 39.0

AVERAGE U - 26.5

ANGLE
 1 64.3
 2 64.1
 3 63.5
 4 62.5
 5 61.4
 6 60.0
 7 58.5
 8 57.1
 9 55.6
 10 54.0
 11 52.5
 12 51.1
 13 49.5
 14 48.1
 15 46.7
 16 45.2
 17 43.8
 18 42.3
 19 40.8
 20 39.3
 21 37.8
 22 36.4
 23 34.9
 24 33.4
 25 31.9
 26 30.4
 27 28.9
 28 27.4
 29 25.9
 30 24.4
 31 22.8
 32 21.4
 33 19.9
 34 18.3
 35 16.8
 36 15.3
 37 13.8
 38 12.2
 39 10.8
 40 9.8



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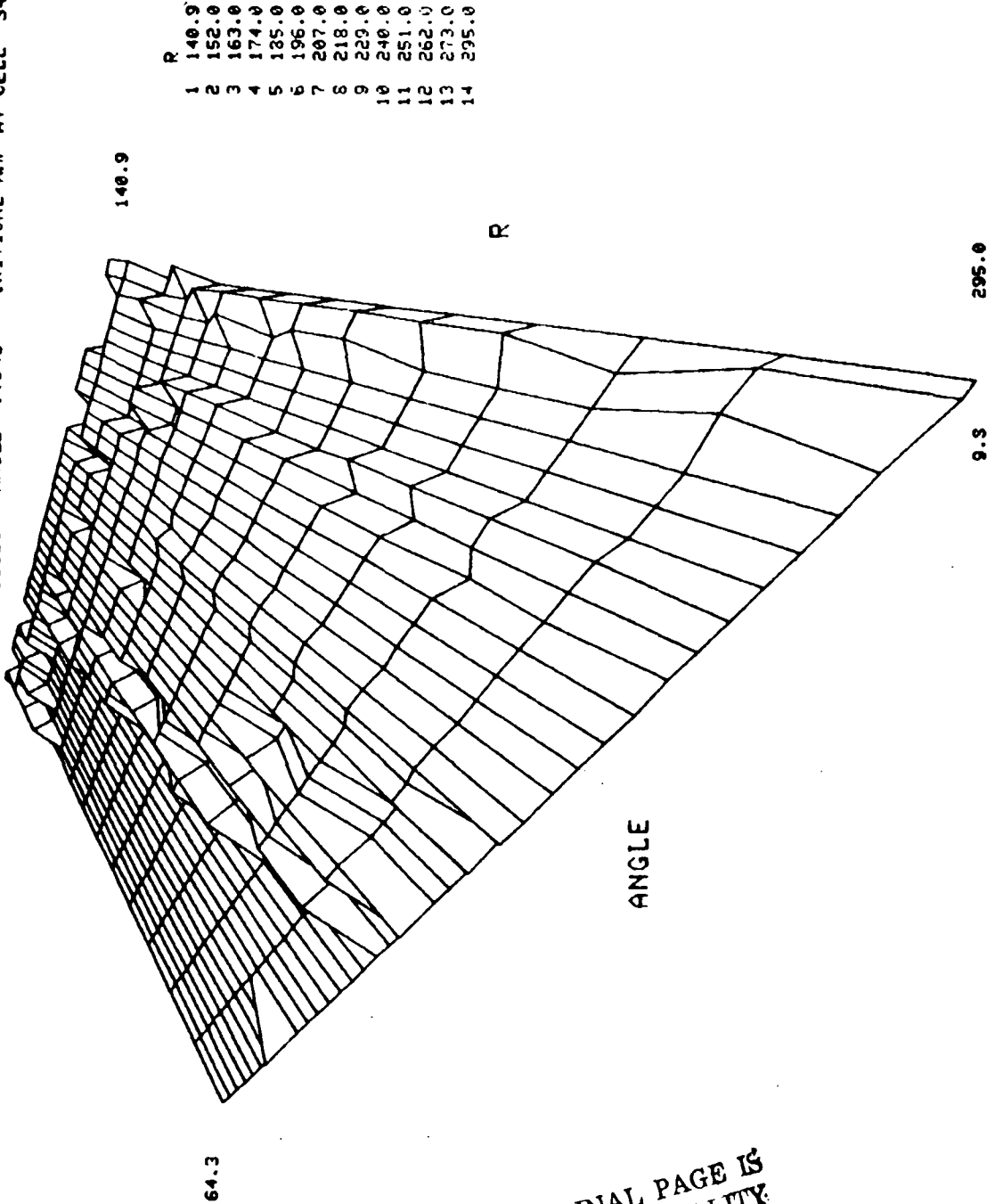
U, R, A DISPLAY (VELOCITY AT IMAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 18 FRAME # 12712 ANGLE 64.562 TC FRAME # 13325 ANGLE 3.543 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 40.0
 AVERAGE U - 14.6

ANGLE
 1 64.3
 2 64.1
 3 63.5
 4 62.5
 5 61.4
 6 60.0
 7 58.5
 8 57.1
 9 55.6
 10 54.0
 11 52.5
 12 51.1
 13 49.5
 14 48.1
 15 46.7
 16 45.2
 17 43.8
 18 42.3
 19 40.8
 20 39.3
 21 37.8
 22 36.4
 23 34.9
 24 33.4
 25 31.9
 26 30.4
 27 28.9
 28 27.4
 29 25.9
 30 24.4
 31 22.8
 32 21.4
 33 19.9
 34 18.3
 35 16.8
 36 15.3
 37 13.8
 38 12.2
 39 10.8
 40 9.8

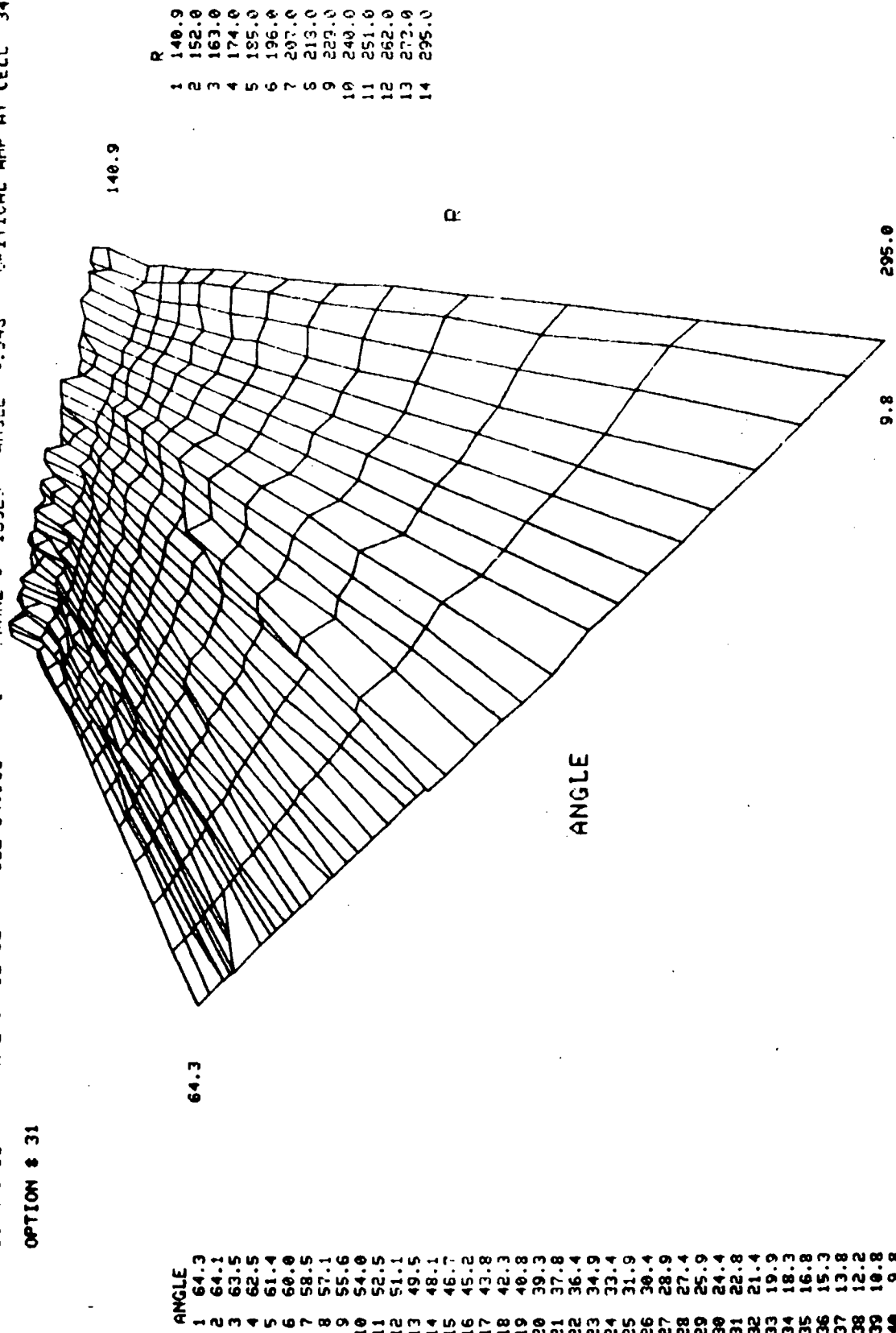


R
 1 140.9
 2 152.0
 3 163.0
 4 174.0
 5 185.0
 6 196.0
 7 207.0
 8 218.0
 9 229.0
 10 240.0
 11 251.0
 12 262.0
 13 273.0
 14 295.0

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U MAX, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TYPE 1 OF 2-20239
 SCAN # 18 FRAME # 12712 ANGLE 64.568 TO FRAME # 13325 ANGLE 9.543 OPTICAL AMP AT CELL 34
 OPTION # 31



U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 19 FRAME # 13325 ANGLE 9.543 TO FRAME # 13352 ANGLE 64.756 CRITICAL AMP AT CELL 34

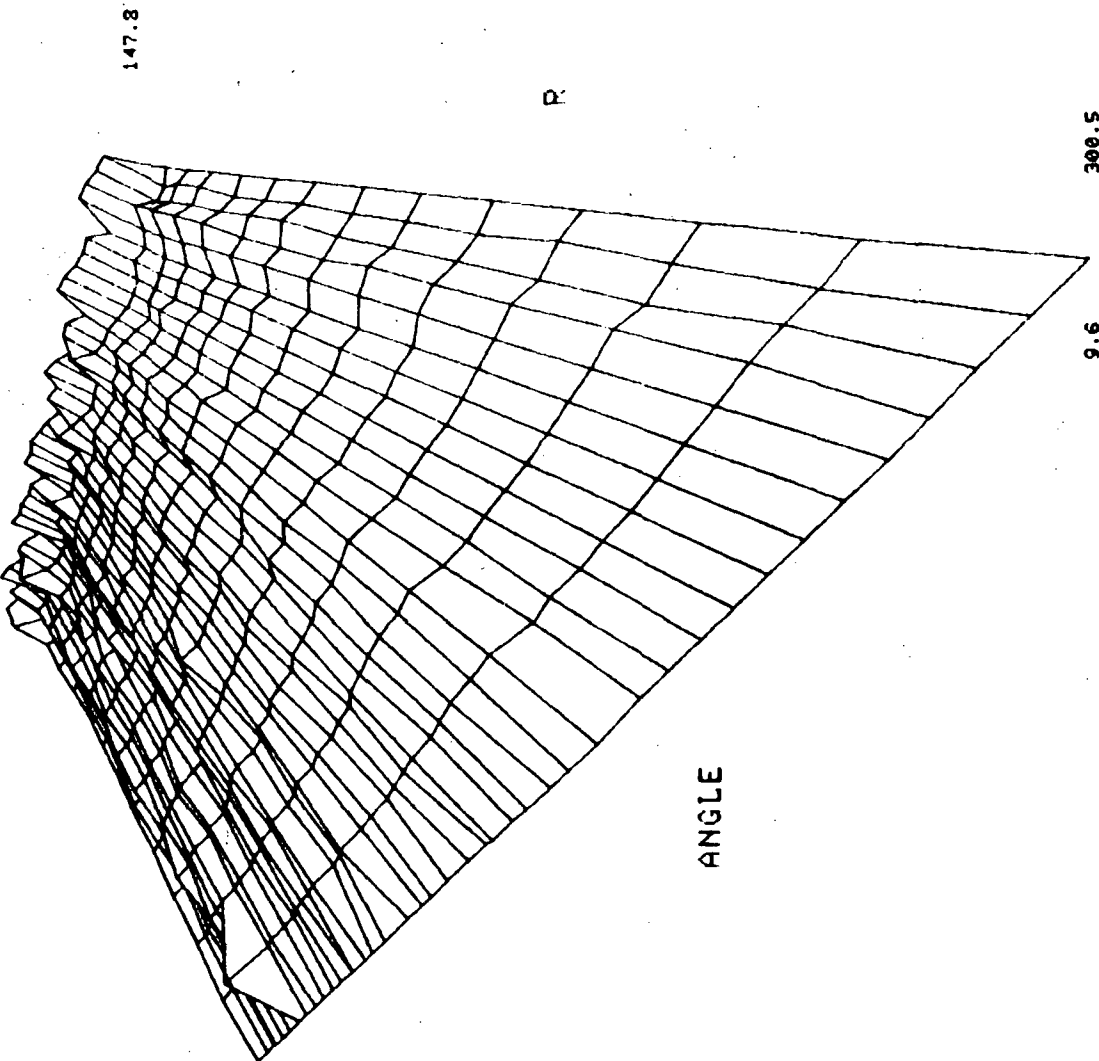
OPTION # 11

MAXIMUM I - 171.0

AVERAGE I - 74.6

ANGLE	
1	9.6
2	9.8
3	10.1
4	10.9
5	12.0
6	13.2
7	14.5
8	16.1
9	17.7
10	19.1
11	20.5
12	22.0
13	23.6
14	25.0
15	26.5
16	28.1
17	29.6
18	31.1
19	32.6
20	34.0
21	35.5
22	37.1
23	38.4
24	40.0
25	41.5
26	43.0
27	44.4
28	45.8
29	47.3
30	48.7
31	50.2
32	51.8
33	53.1
34	54.6
35	56.0
36	57.6
37	59.1
38	60.6
39	62.1
40	63.5
41	64.3

R	
1	147.8
2	158.7
3	169.6
4	180.5
5	191.4
6	202.4
7	213.3
8	224.2
9	235.1
10	246.0
11	256.9
12	267.8
13	278.7
14	300.5



IMAX, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 * SCAN # 19 FRAME # 13325 ANGLE 9.543 TO FRAME # 13952 ANGLE 64.756 OPTICAL AMP AT CELL 34

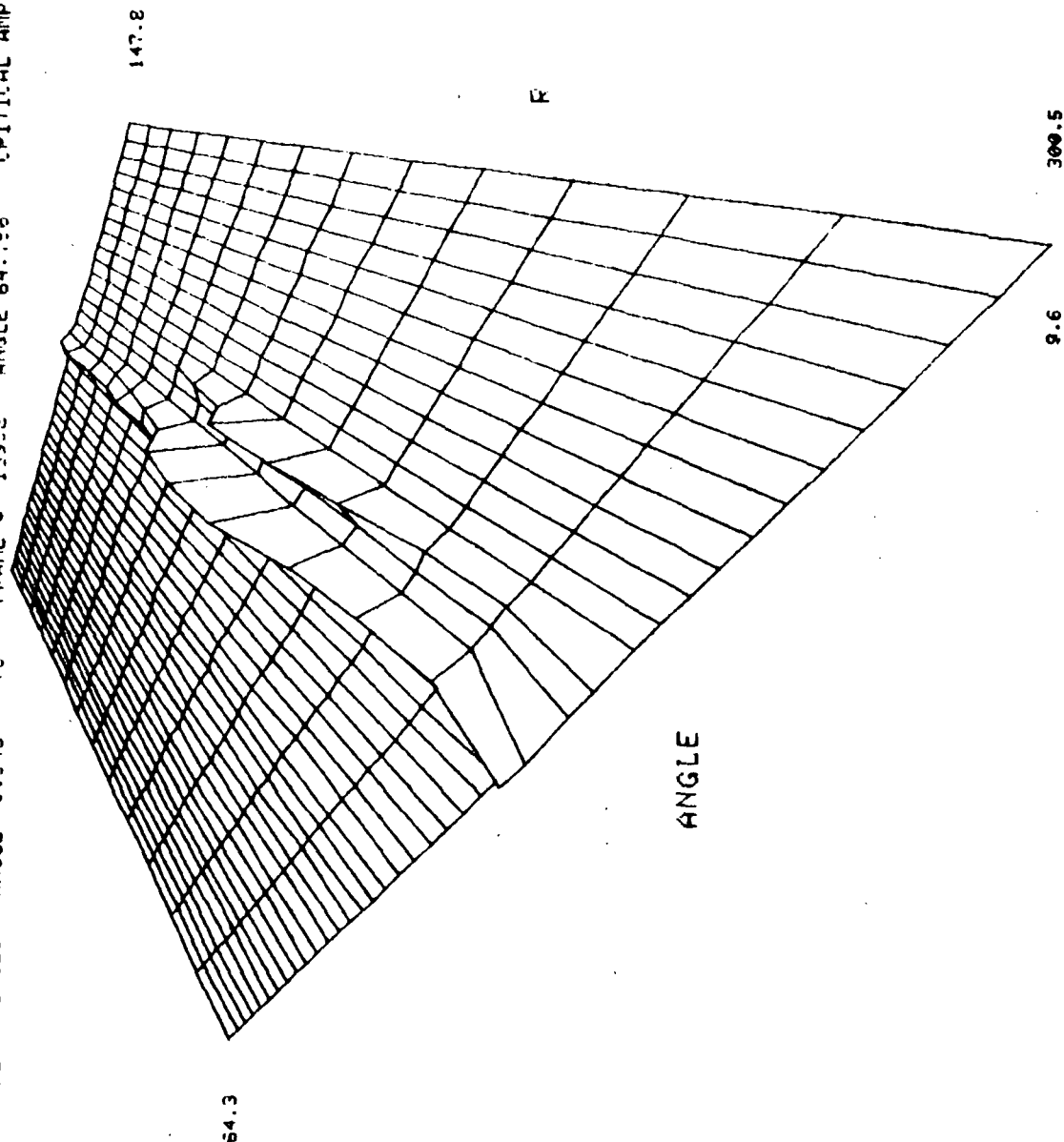
OPTION # 12

MAXIMUM I - 80.0

AVERAGE I - 3.0

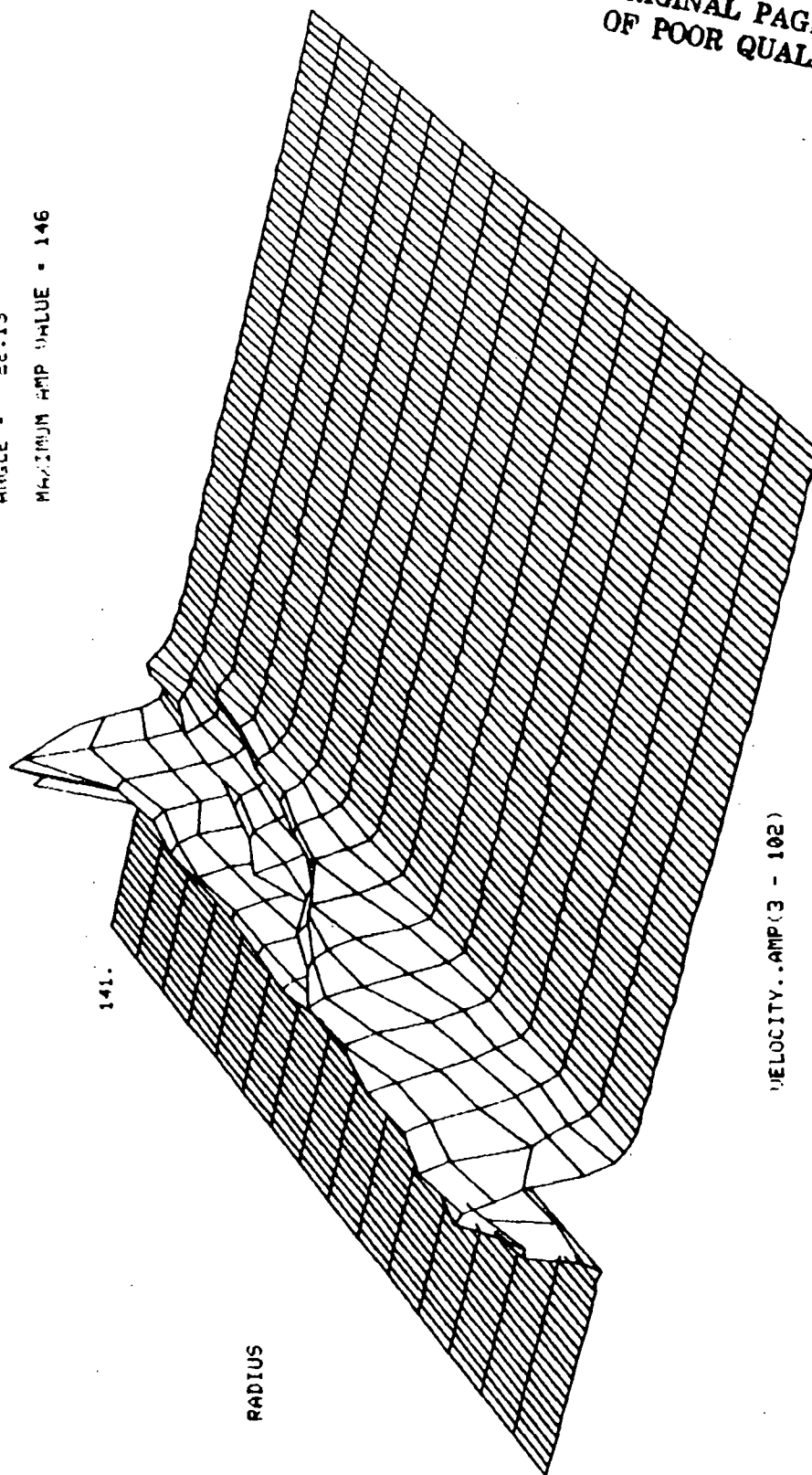
ANGLE	
1	9.6
2	9.8
3	10.1
4	10.9
5	12.0
6	13.2
7	14.5
8	16.1
9	17.7
10	19.1
11	20.5
12	22.0
13	23.6
14	25.0
15	26.5
16	28.1
17	29.6
18	31.1
19	32.6
20	34.0
21	35.5
22	37.1
23	38.4
24	40.0
25	41.5
26	43.0
27	44.4
28	45.8
29	47.3
30	48.7
31	50.2
32	51.8
33	53.1
34	54.6
35	56.0
36	57.6
37	59.1
38	60.6
39	62.1
40	63.5
41	64.3

R	
1	147.8
2	158.7
3	169.6
4	180.5
5	191.4
6	202.4
7	213.3
8	224.2
9	235.1
10	246.0
11	256.9
12	267.8
13	278.7
14	289.5



I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20329
 SCAN # 19 FRAME # 13325 ANGLE 9.546 TO FRAME # 13952 ANGLE 64.756 CRITICAL AMP AT CELL 34
 FRAME # 13546 TO 13562
 ANGLE = 28.13
 MAXIMUM AMP VALUE = 146

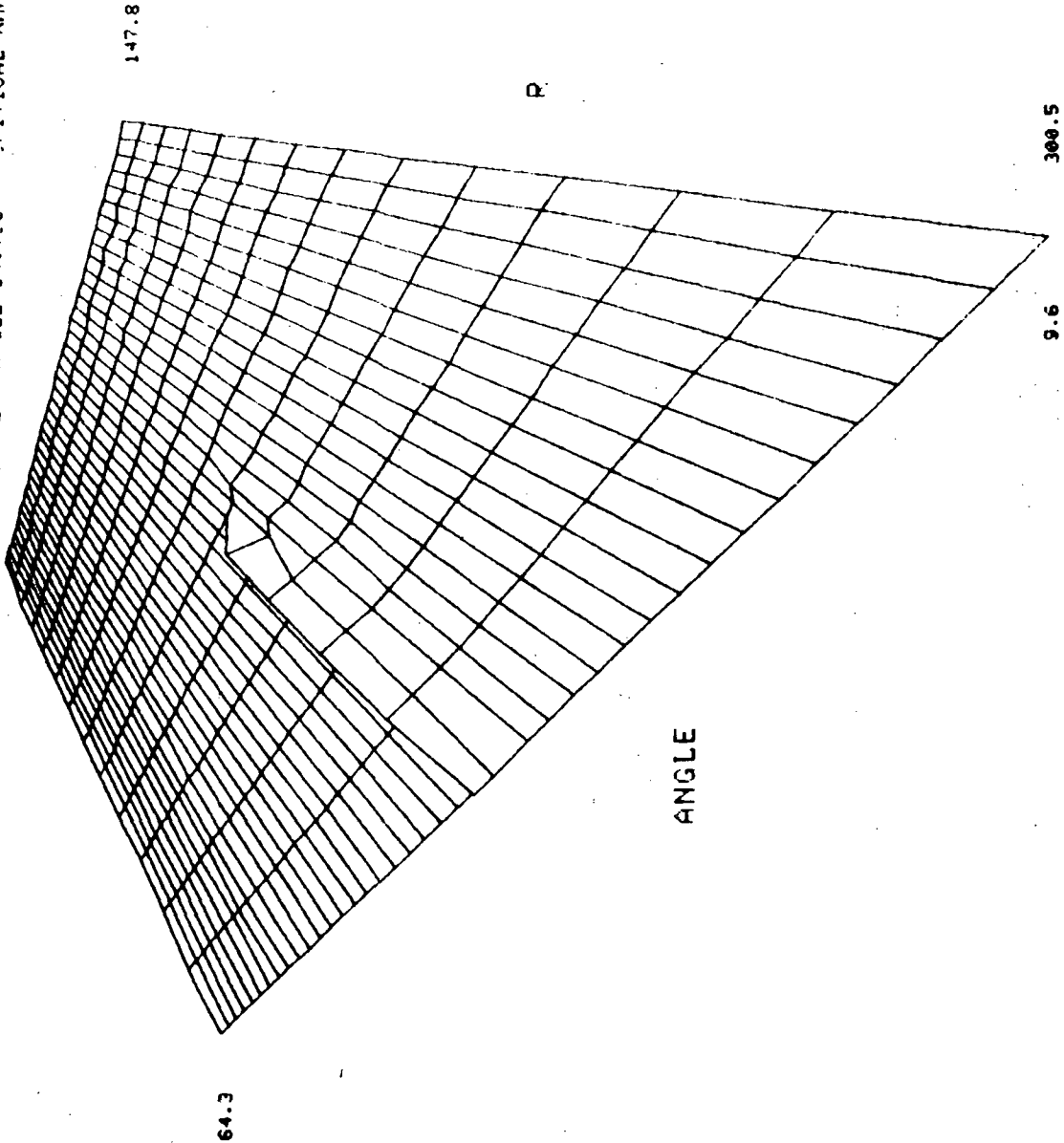


NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TARE TIME 2-20239
 SCAN # 19 FRAME # 13325 ANGLE 9.548 TO FRAME # 13952 ANGLE 64.756 OPTICHL NMF AT CELL 34

OPTION # 21

MAXIMUM U - 43.0
 AVERAGE U - 26.5

R
 1 147.8
 2 158.7
 3 169.6
 4 180.5
 5 191.4
 6 202.4
 7 213.3
 8 224.2
 9 235.1
 10 246.0
 11 256.9
 12 267.8
 13 278.7
 14 289.6



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ANGLE
 1 9.6
 2 9.8
 3 10.1
 4 10.9
 5 12.0
 6 13.2
 7 14.5
 8 16.1
 9 17.7
 10 19.1
 11 20.5
 12 22.0
 13 23.6
 14 25.0
 15 26.5
 16 28.1
 17 29.6
 18 31.1
 19 32.6
 20 34.0
 21 35.5
 22 37.1
 23 38.4
 24 40.0
 25 41.5
 26 43.0
 27 44.4
 28 45.8
 29 47.3
 30 48.7
 31 50.2
 32 51.8
 33 53.1
 34 54.6
 35 56.0
 36 57.6
 37 59.1
 38 60.6
 39 62.1
 40 63.5
 41 64.3

U, R, A DISPLAY (VELOCITY AT I_{MAX})

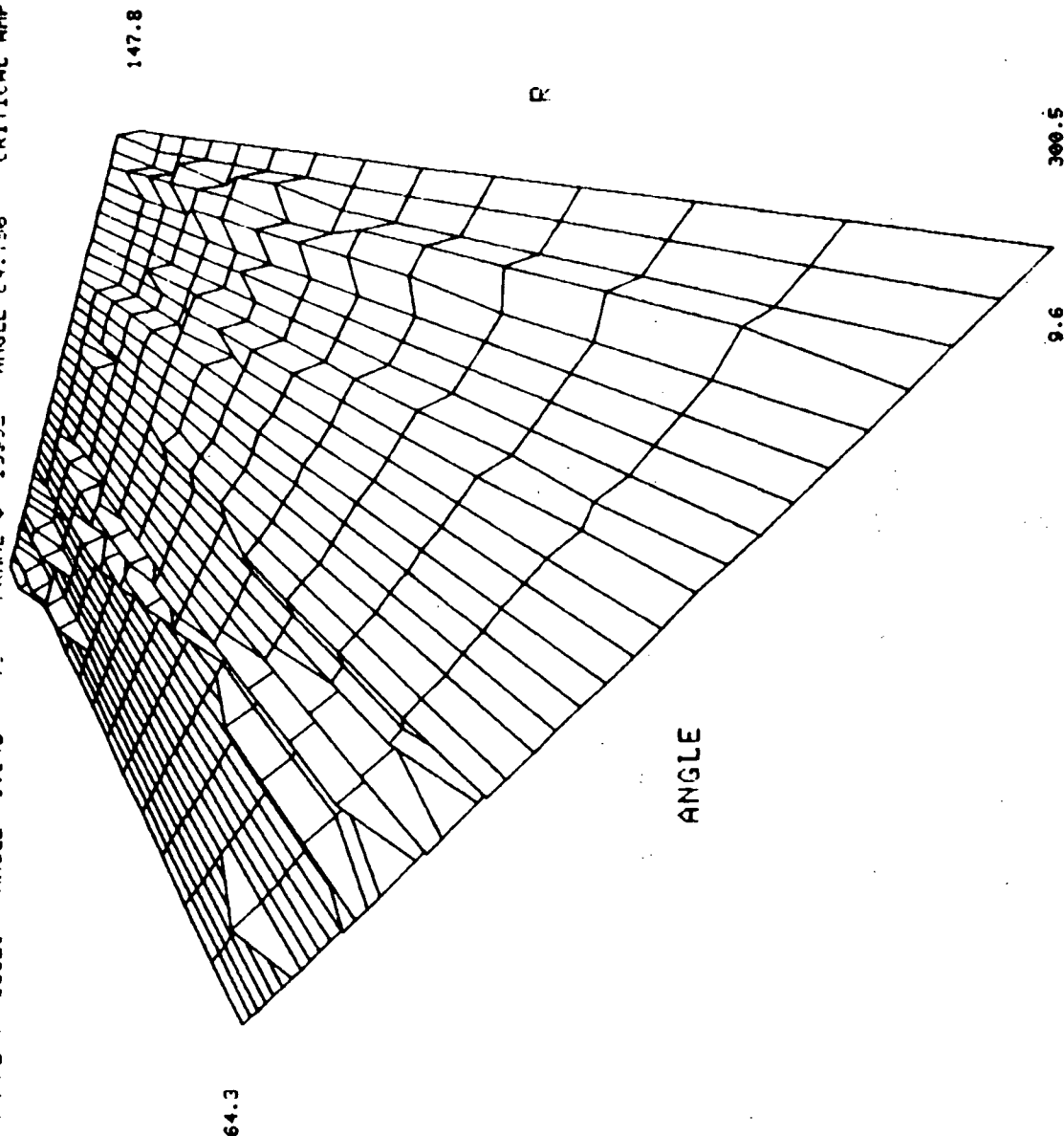
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 19 FRAME # 13325 ANGLE 9.548 TO FRAME # 13952 ANGLE 64.756 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U = 43.0

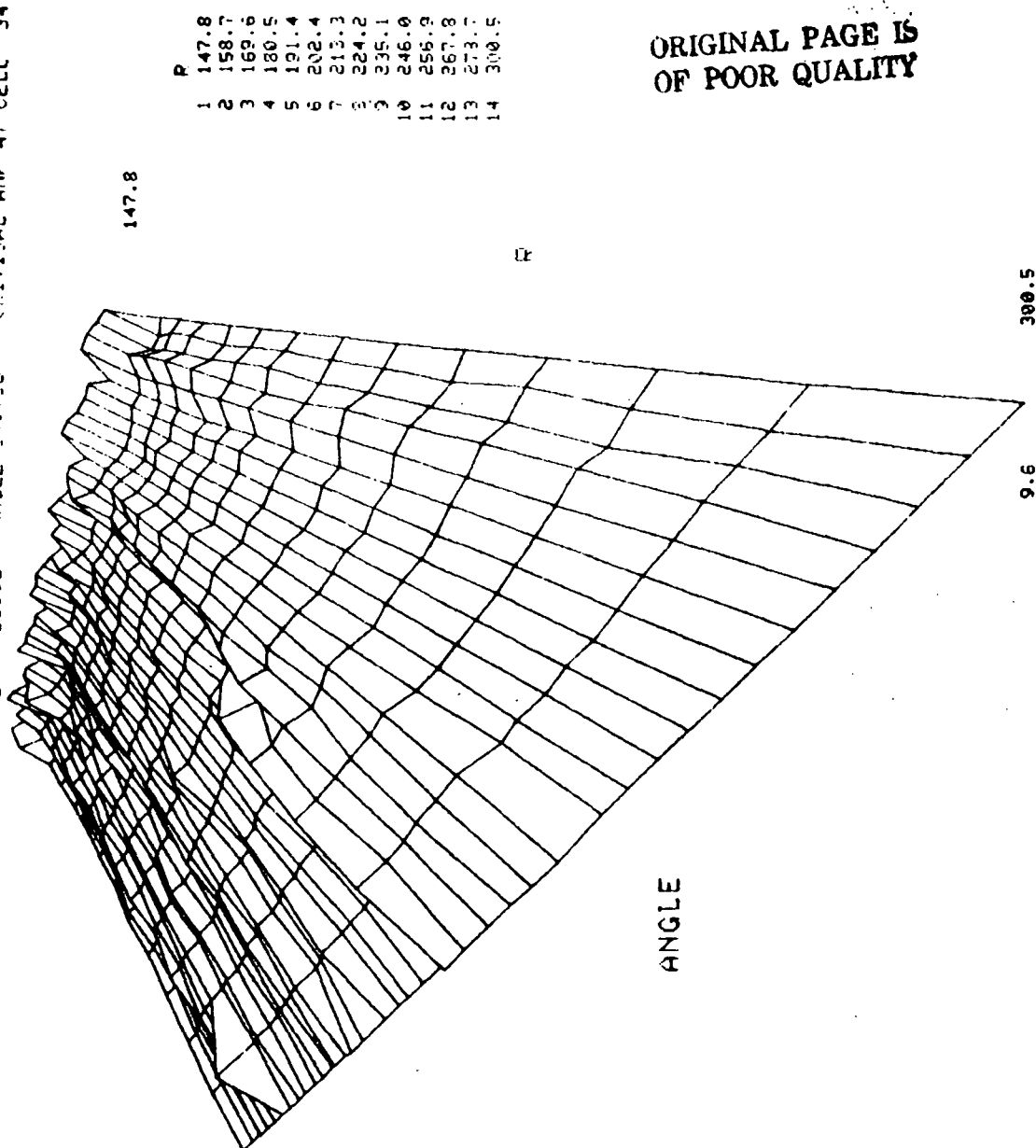
AVERAGE U = 14.2

ANGLE
1 9.6
2 9.8
3 10.1
4 10.9
5 12.0
6 13.2
7 14.5
8 16.1
9 17.7
10 19.1
11 20.5
12 22.0
13 23.6
14 25.0
15 26.5
16 28.1
17 29.6
18 31.1
19 32.6
20 34.0
21 35.5
22 37.1
23 38.4
24 40.0
25 41.5
26 43.0
27 44.4
28 45.8
29 47.3
30 48.7
31 50.2
32 51.8
33 53.1
34 54.6
35 56.0
36 57.6
37 59.1
38 60.6
39 62.1
40 63.5
41 64.3



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TARE 1 OF 3-20333
 SCAN # 19 FRAME # 13325 ANGLE 9.543 TO FRAME # 13952 ANGLE 64.756 CRITICAL WMP AT CELL 34
 OPTION # 31



ANGLE
 1 9.6
 2 9.8
 3 10.1
 4 10.9
 5 12.0
 6 13.2
 7 14.5
 8 16.1
 9 17.7
 10 19.1
 11 20.5
 12 22.0
 13 23.6
 14 25.0
 15 26.5
 16 28.1
 17 29.6
 18 31.1
 19 32.6
 20 34.0
 21 35.5
 22 37.1
 23 38.4
 24 40.0
 25 41.5
 26 43.0
 27 44.4
 28 45.8
 29 47.3
 30 48.7
 31 50.2
 32 51.8
 33 53.1
 34 54.6
 35 56.0
 36 57.6
 37 59.1
 38 60.6
 39 62.1
 40 63.5
 41 64.3

R
 1 147.8
 2 158.7
 3 169.6
 4 180.5
 5 191.4
 6 202.4
 7 213.3
 8 224.2
 9 235.1
 10 246.0
 11 256.9
 12 267.8
 13 278.7
 14 300.5

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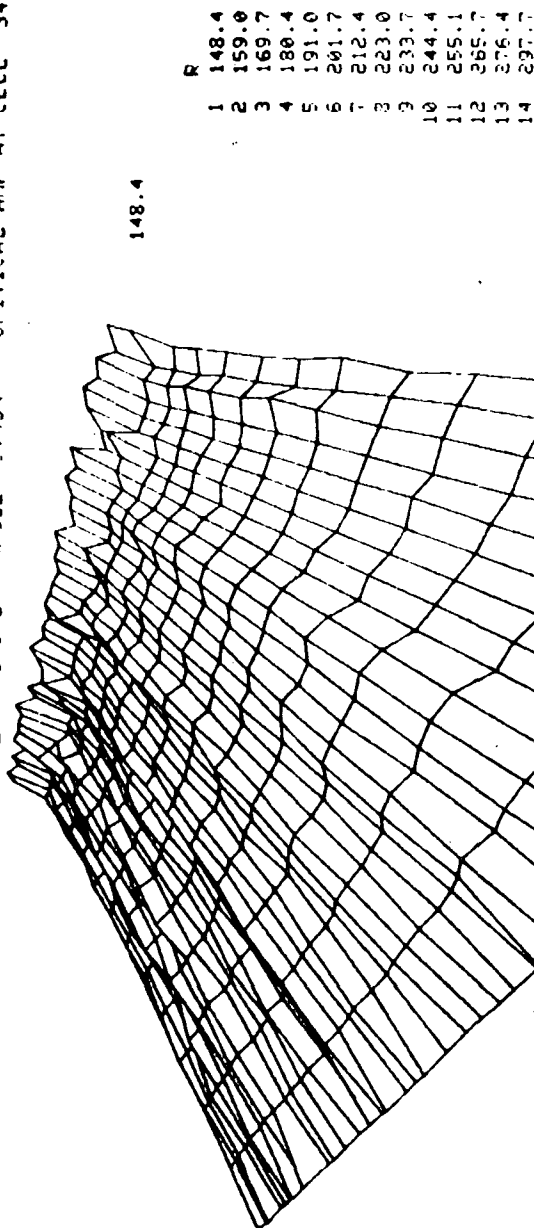
U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 205 RUN # 17 TAPE 1 OF 2-200389
 SCAN # 20 FRAME # 13952 ANGLE 64.756 TO FRAME # 14573 ANGLE 9.454 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 167.0
 AVERAGE I - 76.8

ANGLE
1 64.6
2 64.3
3 63.7
4 63.0
5 61.9
6 60.6
7 59.2
8 57.7
9 56.2
10 54.6
11 53.1
12 51.7
13 50.2
14 48.8
15 47.3
16 45.9
17 44.4
18 43.0
19 41.6
20 40.1
21 38.5
22 37.0
23 35.6
24 34.0
25 32.5
26 31.0
27 29.5
28 28.1
29 26.6
30 25.0
31 23.5
32 22.0
33 20.5
34 19.0
35 17.6
36 15.9
37 14.5
38 13.0
39 11.4
40 10.2
41 9.6



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IMAX, R, A DISPLAY

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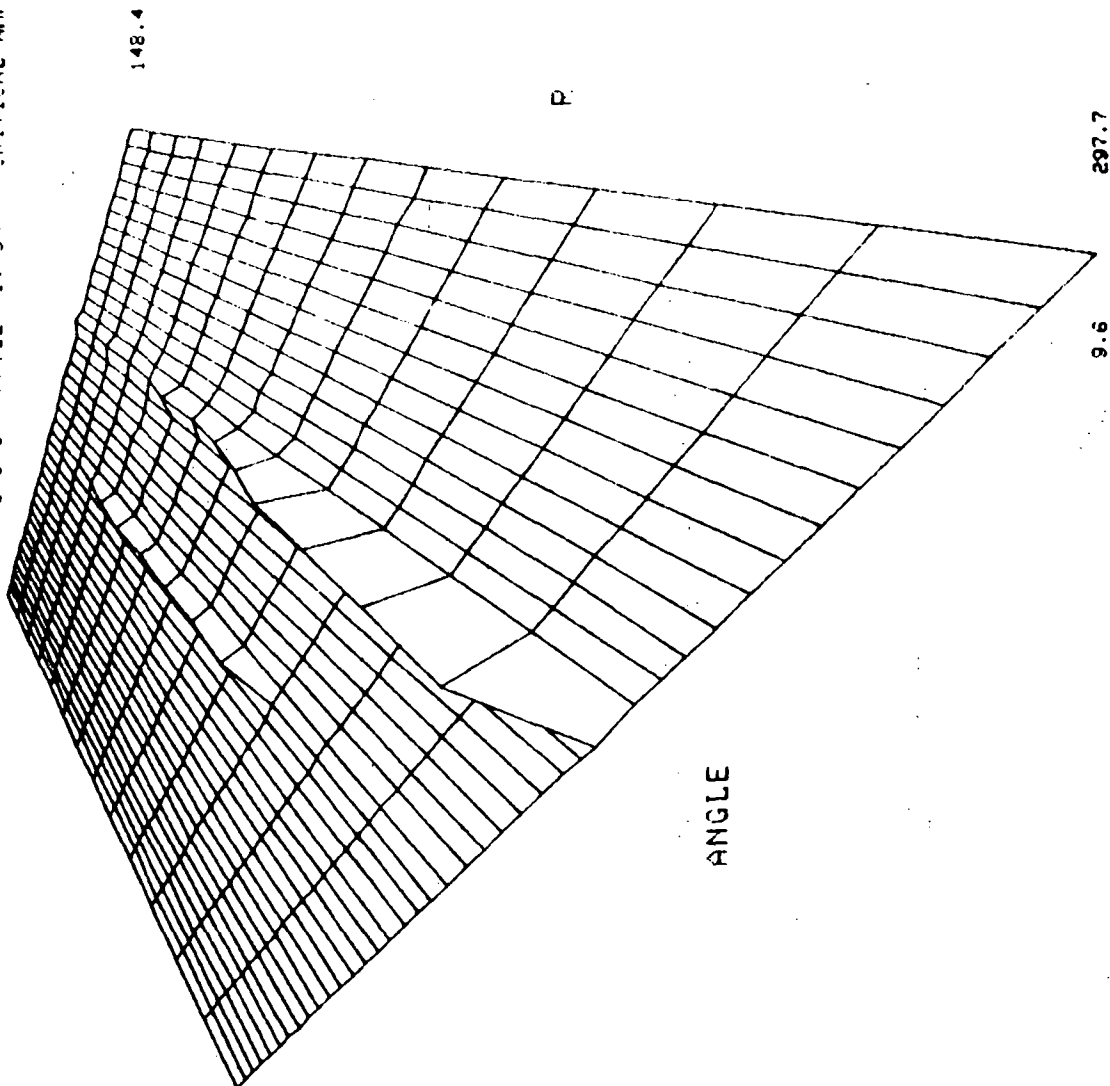
NASA PROJECT DUST DEVIL DWY 236 RUN # 17 TAPE 1 OF 3-20829
SCAN # 20 FRAME # 13952 ANGLE 64.756 TO FRAME # 14573 ANGLE 3.454 CRITICAL AMP WT CELL 34

OPTION # 12

MAXIMUM I - 137.0

AVERAGE I - 2.9

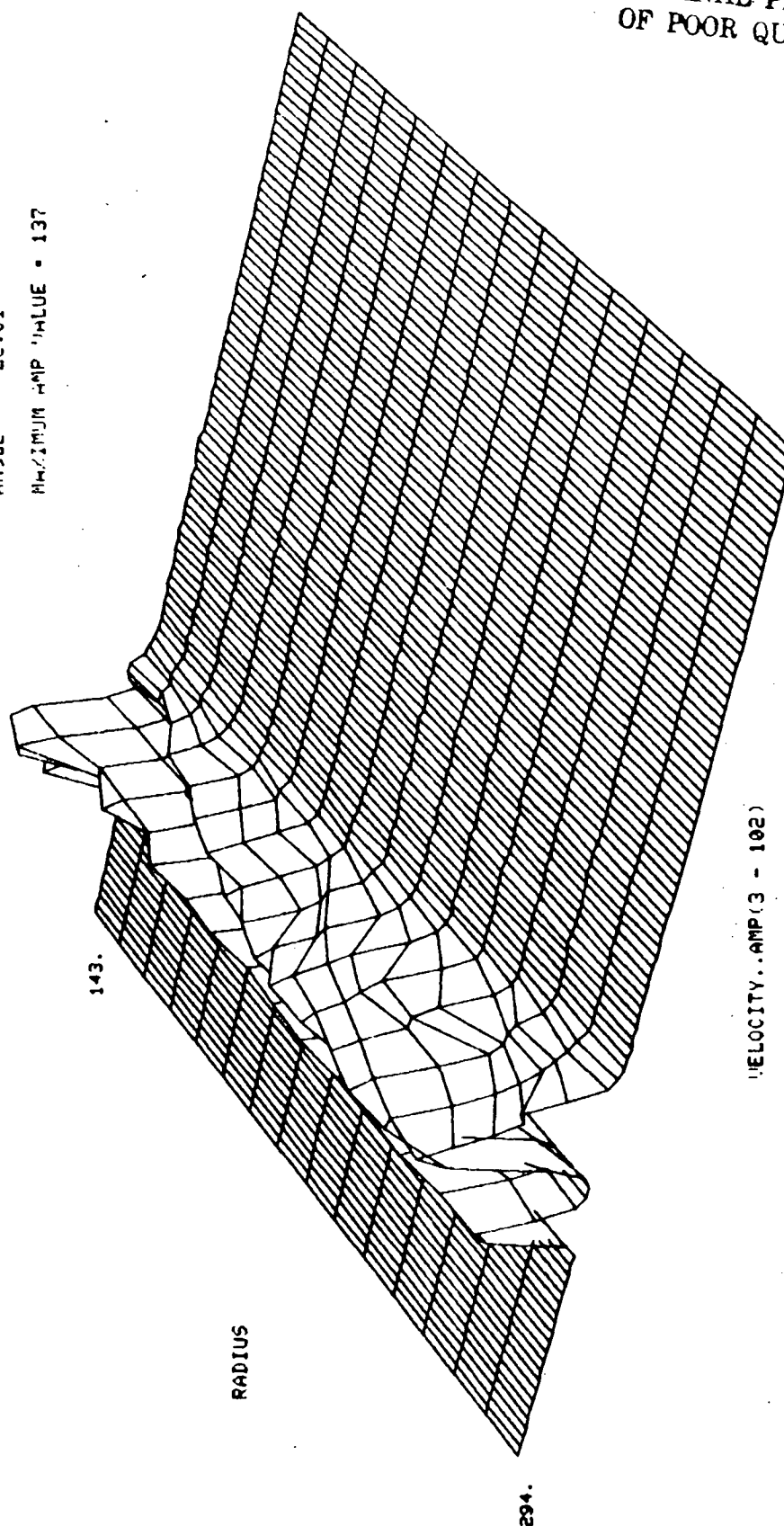
ANGLE
1 64.6
2 64.3
3 63.7
4 63.0
5 61.9
6 60.6
7 59.2
8 57.7
9 56.2
10 54.6
11 53.1
12 51.7
13 50.2
14 48.8
15 47.3
16 45.9
17 44.4
18 43.0
19 41.6
20 40.1
21 38.5
22 37.0
23 35.6
24 34.0
25 32.5
26 31.0
27 29.5
28 28.1
29 26.6
30 25.0
31 23.5
32 22.0
33 20.5
34 19.0
35 17.6
36 15.9
37 14.5
38 13.0
39 11.4
40 10.2
41 9.6



I, R, A DISPLAY AT VELOCITY CELL 34

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
SCAN # 20 FRAME # 13952 ANGLE 64.756 TO FRAME # 14573 ANGLE 9.454 CRITICAL AMP AT CELL 34
FRAME # 14360 TO 14376
ANGLE = 28.01
MAXIMUM AMP VALUE = 137



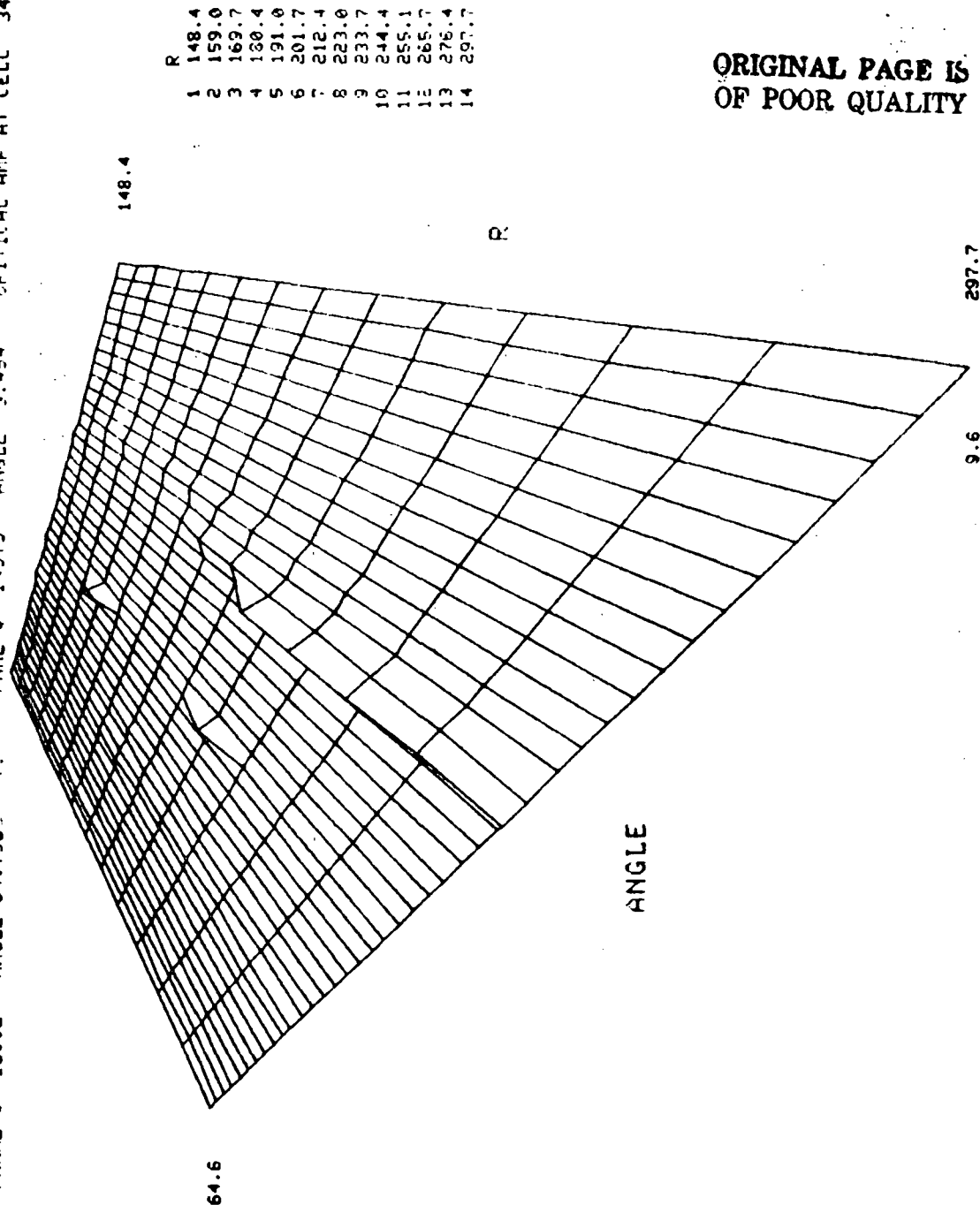
NASA PROJECT MUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20329
 FRAME # 20 ANGLE 64.756 TO FRAME # 14573 ANGLE 9.454 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 41.0

AVERAGE U - 26.4

ANGLE
 1 64.6
 2 64.3
 3 63.7
 4 63.0
 5 61.9
 6 60.6
 7 59.2
 8 57.7
 9 56.2
 10 54.6
 11 53.1
 12 51.7
 13 50.2
 14 48.8
 15 47.3
 16 45.9
 17 44.4
 18 43.0
 19 41.6
 20 40.1
 21 38.5
 22 37.0
 23 35.6
 24 34.0
 25 32.5
 26 31.0
 27 29.5
 28 28.1
 29 26.6
 30 25.0
 31 23.5
 32 22.0
 33 20.5
 34 19.0
 35 17.6
 36 15.9
 37 14.5
 38 13.0
 39 11.4
 40 10.2
 41 9.6



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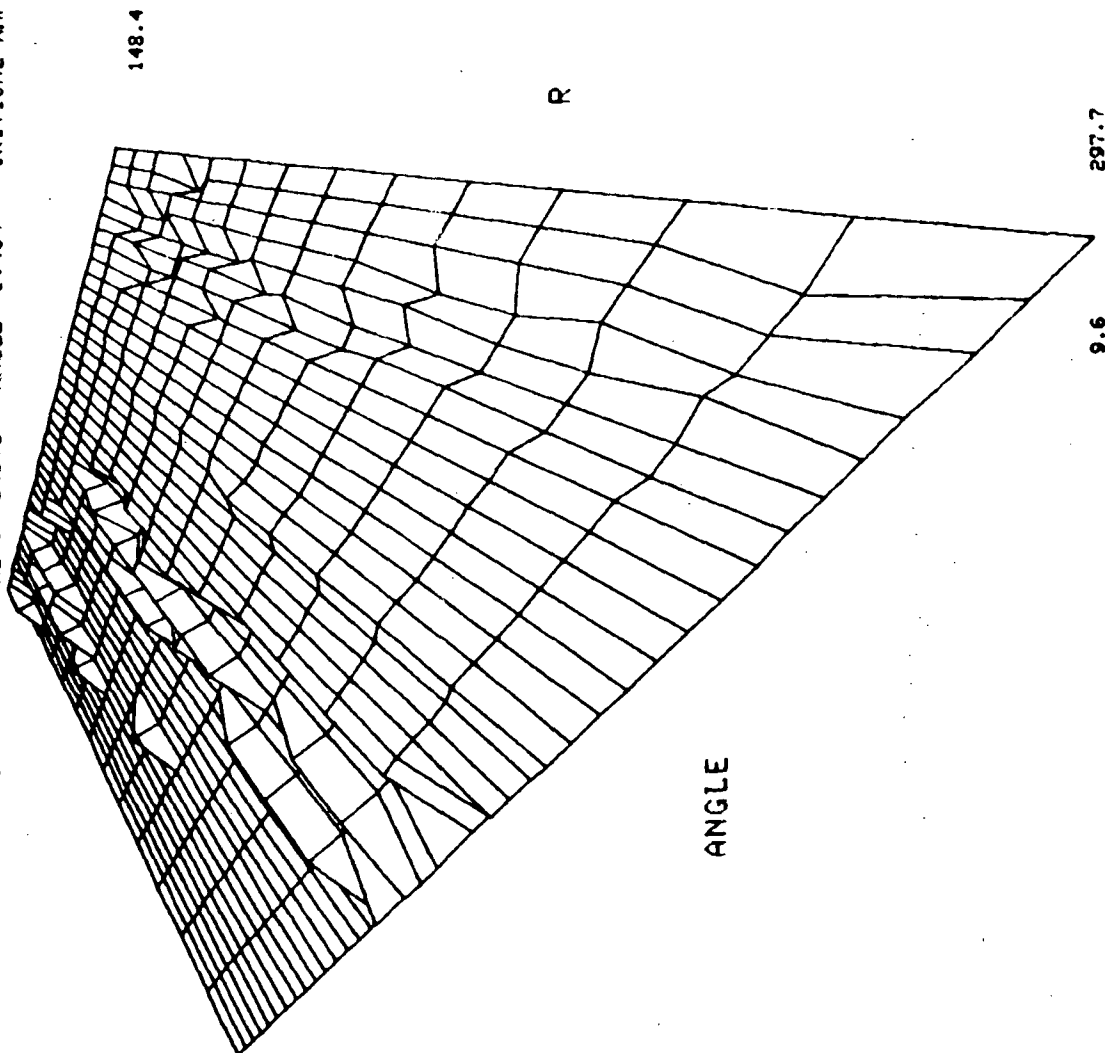
U, R, A DISPLAY (VELOCITY AT I_{MAX})

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 20 FRAME # 13952 ANGLE 64.756 TO FRAME # 14573 ANGLE 9.454 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 42.0
 AVERAGE U - 16.1

ANGLE
 1 64.6
 2 64.3
 3 63.7
 4 63.0
 5 61.9
 6 60.6
 7 59.2
 8 57.7
 9 56.2
 10 54.6
 11 53.1
 12 51.7
 13 50.2
 14 48.8
 15 47.3
 16 45.9
 17 44.4
 18 43.0
 19 41.6
 20 40.1
 21 38.5
 22 37.0
 23 35.6
 24 34.0
 25 32.5
 26 31.0
 27 29.5
 28 28.1
 29 26.6
 30 25.0
 31 23.5
 32 22.0
 33 20.5
 34 19.0
 35 17.6
 36 15.9
 37 14.5
 38 13.0
 39 11.4
 40 10.2
 41 9.6

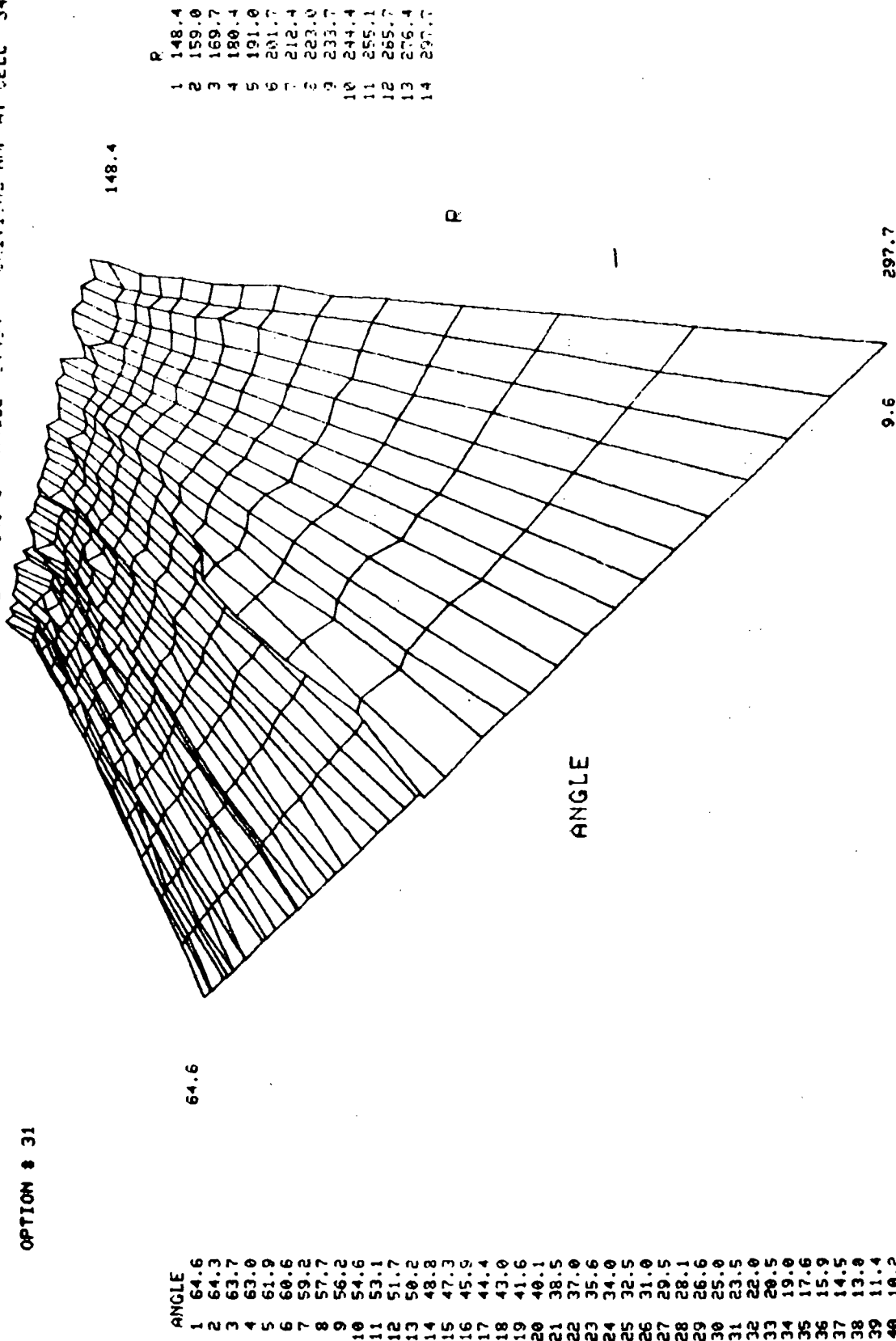


R
 1 148.4
 2 159.0
 3 169.7
 4 180.4
 5 191.0
 6 201.7
 7 212.4
 8 223.0
 9 233.7
 10 244.4
 11 255.1
 12 265.7
 13 276.4
 14 287.7

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U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 238 RUN # 17 TAPE 1 OF 3-23889
 SCAN # 20 FRAME # 13952 ANGLE 64.756 TO FRAME # 14573 ANGLE 9.454 CRITICAL AMP AT CELL 34
 OPTION # 31



U x Imax, R, A DISPLAY

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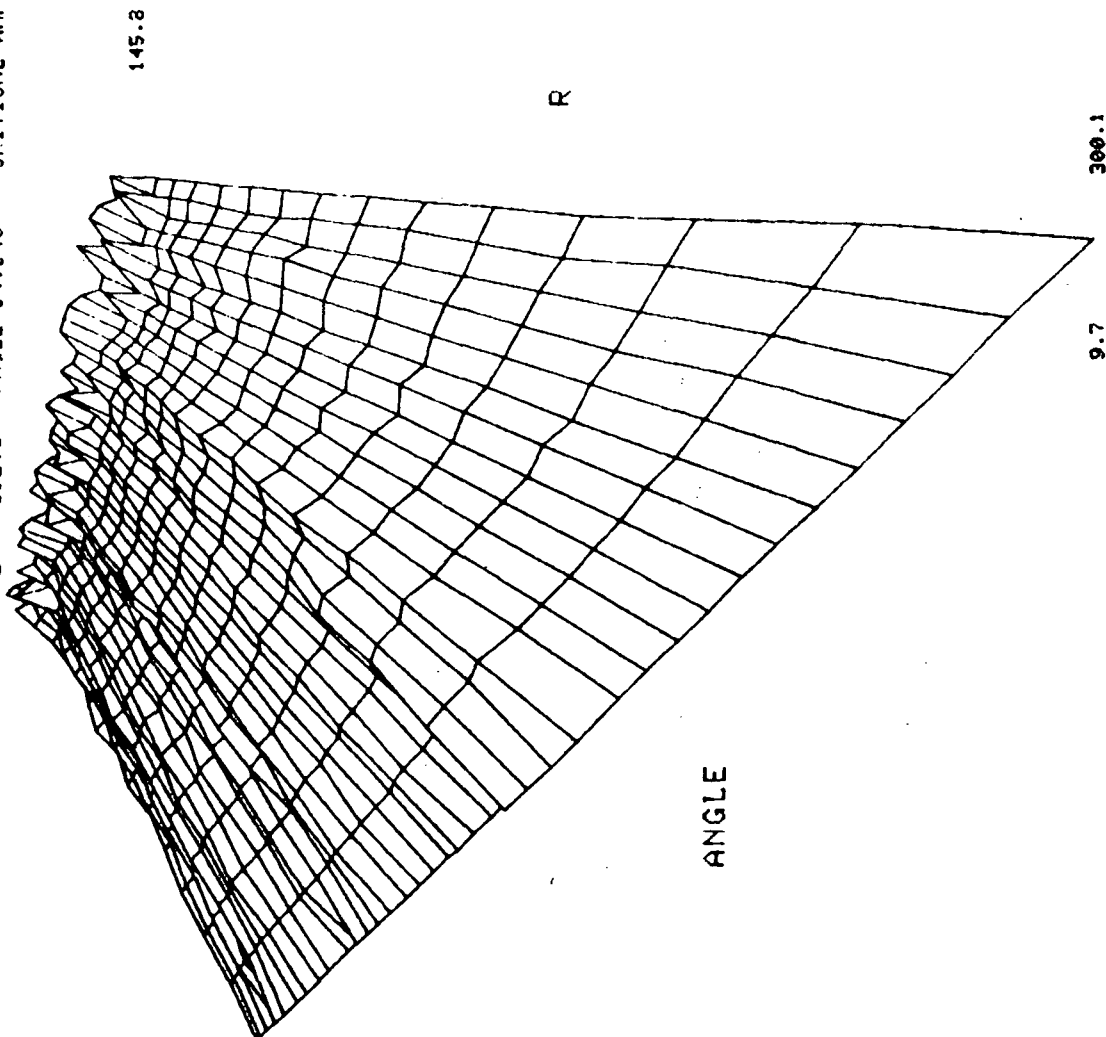
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20289
SCAN # 21 FRAME # 14573 ANGLE 9.454 TO FRAME # 15203 ANGLE 64.540 CRITICAL WMP AT CELL 34

OPTION # 11

MAXIMUM I - 165.0
AVERAGE I - 79.4

ANGLE
1 9.7
2 9.9
3 10.5
4 11.5
5 12.7
6 14.0
7 15.4
8 17.0
9 18.5
10 19.9
11 21.4
12 22.8
13 24.4
14 25.8
15 27.5
16 28.9
17 30.4
18 31.8
19 33.4
20 34.9
21 36.3
22 37.9
23 39.3
24 40.8
25 42.3
26 43.7
27 45.1
28 46.6
29 48.0
30 49.6
31 51.0
32 52.5
33 54.0
34 55.4
35 56.9
36 58.4
37 59.9
38 61.4
39 63.0
40 64.1
41 64.3

64.3



145.8

R

9.7

300.1

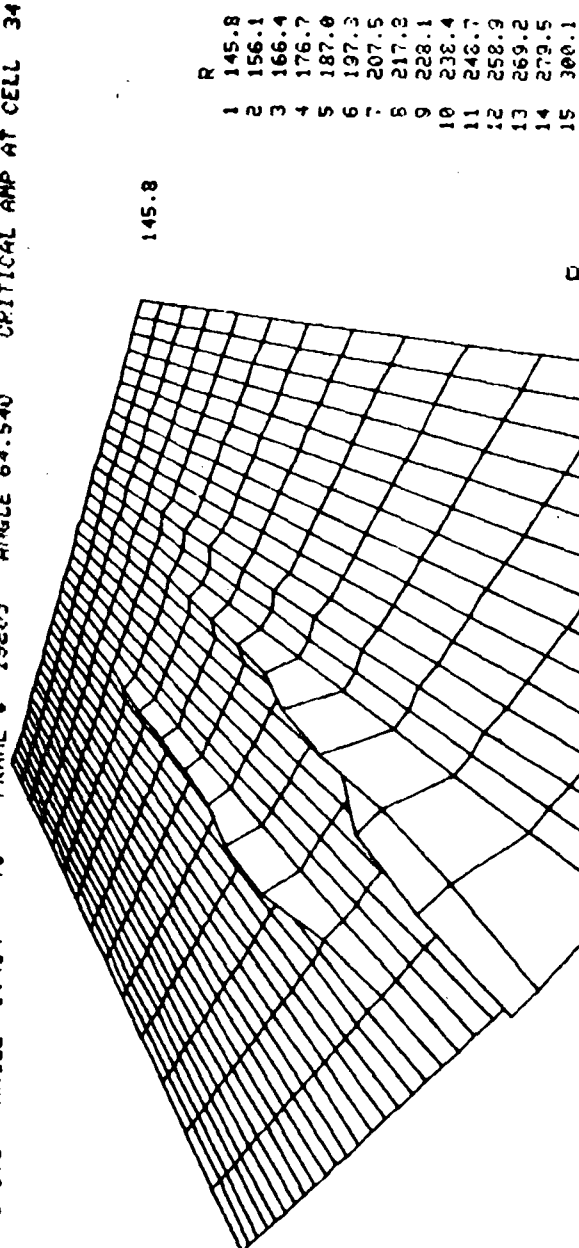
IMAX, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 21 FRAME # 14573 ANGLE 9.454 TO FRAME # 15203 ANGLE 64.540 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 135.0
 AVERAGE I - 3.2

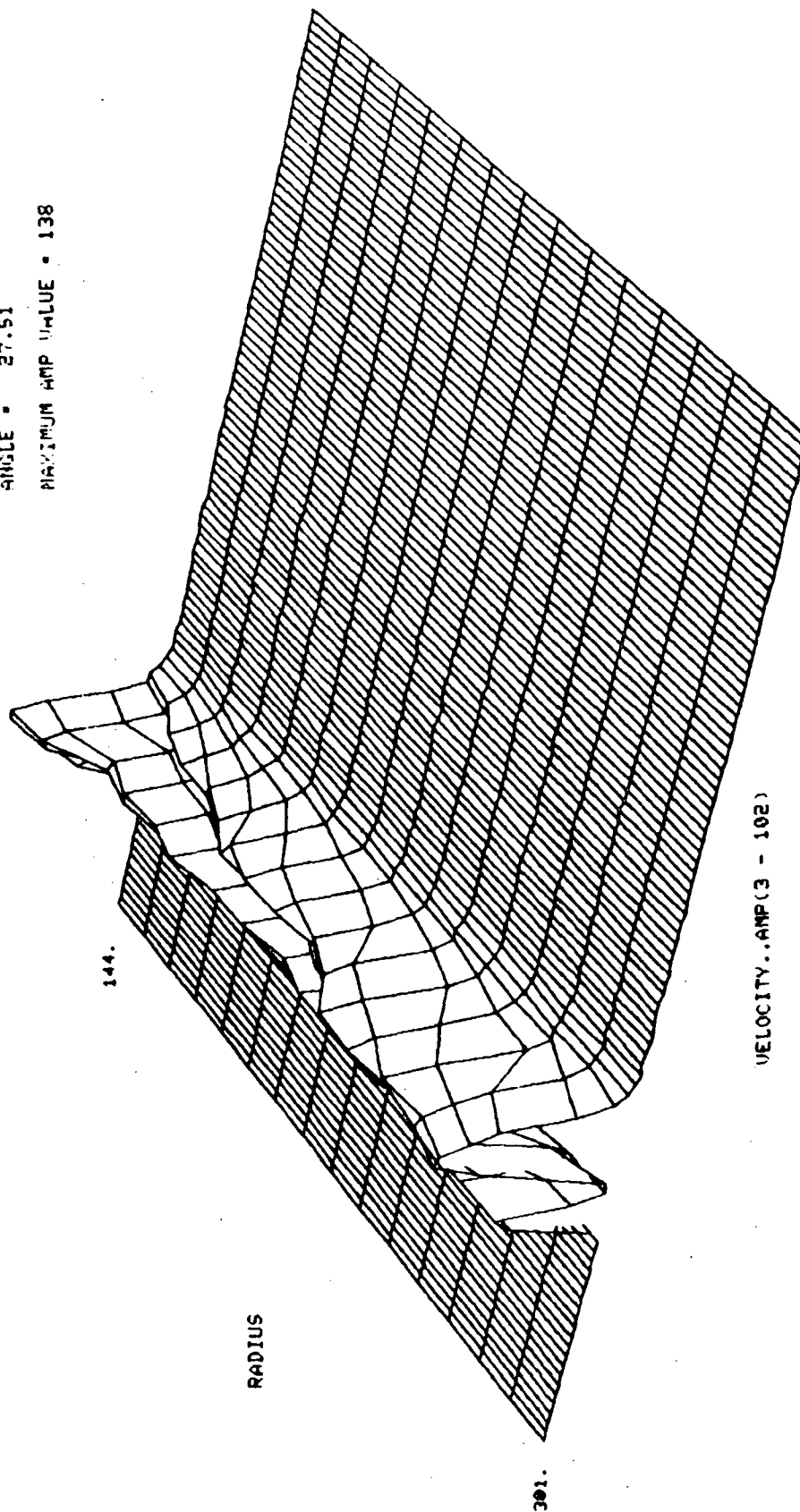
ANGLE
 1 9.7
 2 9.9
 3 10.5
 4 11.5
 5 12.7
 6 14.0
 7 15.4
 8 17.0
 9 18.5
 10 19.9
 11 21.4
 12 22.8
 13 24.4
 14 25.8
 15 27.5
 16 28.9
 17 30.4
 18 31.8
 19 33.4
 20 34.9
 21 36.3
 22 37.9
 23 39.3
 24 40.8
 25 42.3
 26 43.7
 27 45.1
 28 46.6
 29 48.0
 30 49.6
 31 51.0
 32 52.5
 33 54.0
 34 55.4
 35 56.9
 36 58.4
 37 59.9
 38 61.4
 39 63.0
 40 64.1
 41 64.3



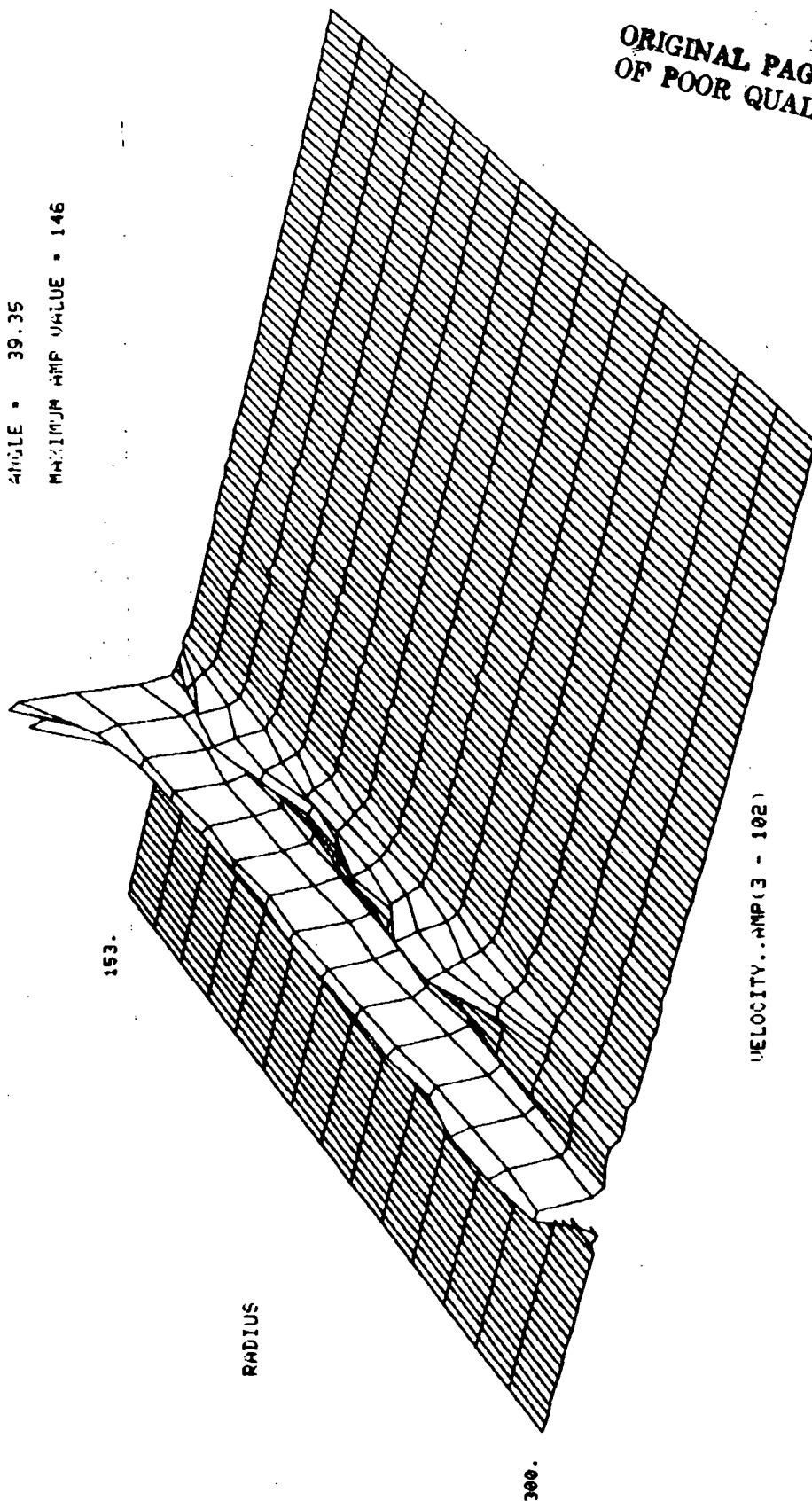
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I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839
 SCAN # 21 FRAME # 14573 ANGLE 9.454 TO FRAME # 15203 ANGLE 64.540 CRITICAL AMP AT CELL 34
 FRAME # 14782 TO 14798
 ANGLE = 27.51
 MAXIMUM AMP VALUE = 138



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 21 FRAME # 14573 ANGLE 9.454 TO FRAME # 15203 ANGLE 64.540 CRITICAL AMP AT CELL 34
 FRAME # 14908 TO 14923
 ANGLE # 39.35
 MAXIMUM AMP VALUE # 146



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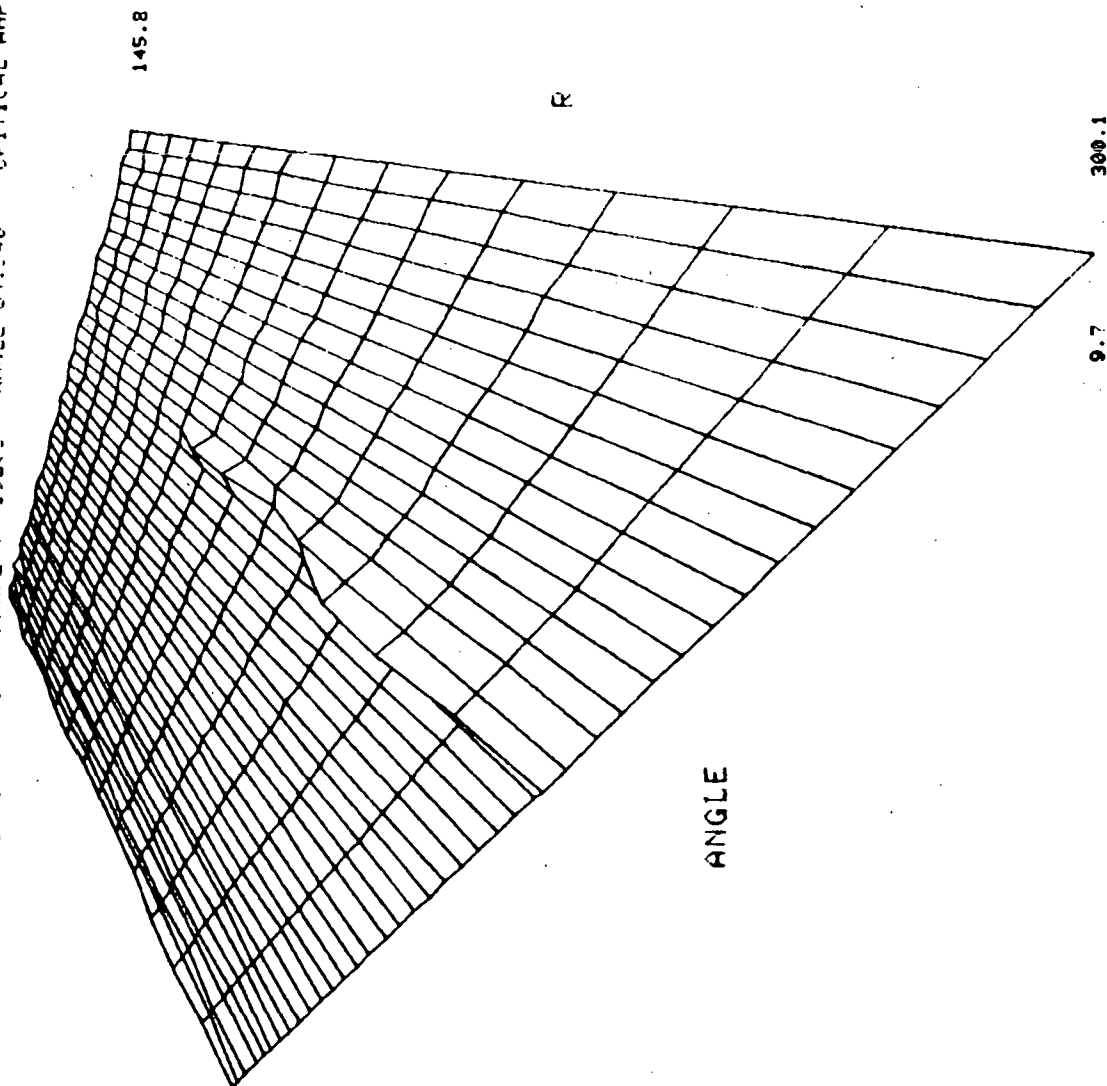
NASA PROJECT DUST DEVIL DAY 206 RUN # 17 TUBE 1 OF 2-20829
 * SCAN # 21 FRAME # 14573 ANGLE 9.454 TO FRAME # 15293 ANGLE 84.540 OPTICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U = 37.0

AVERAGE U = 26.5

ANGLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
9.7	145.8	156.1	166.4	176.7	187.0	197.3	207.5	217.8	228.1	238.4	248.7	258.9	269.2	279.5	289.8	299.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1	300.1



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U, R, A DISPLAY (VELOCITY AT I_{MAX})

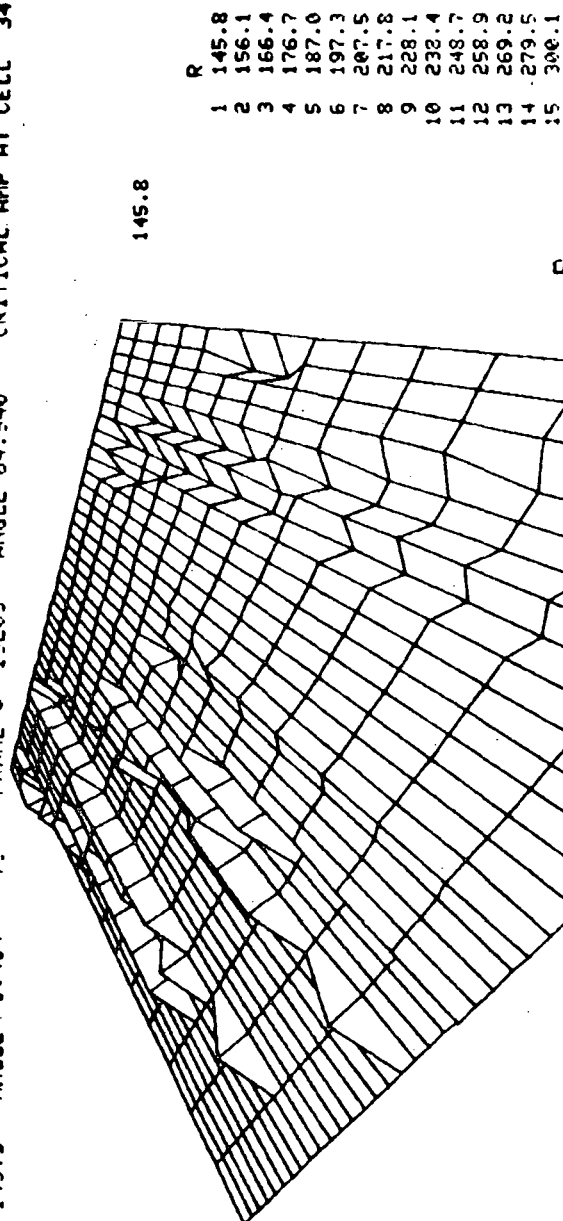
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 * SCAN # 21 FRAME # 14573 ANGLE 9.454 TO FRAME # 15203 ANGLE 64.540 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 41.0

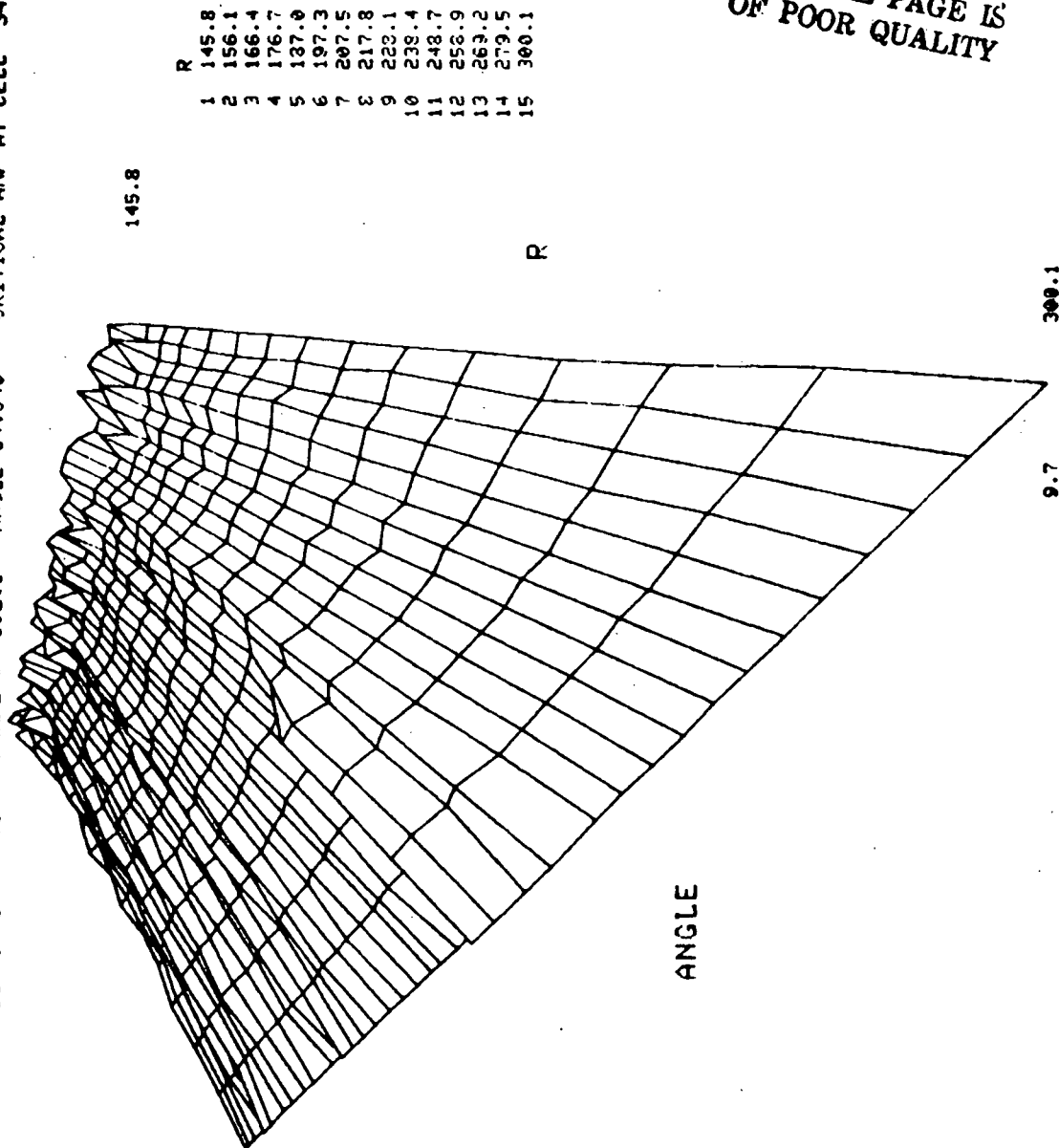
AVERAGE U - 17.5

ANGLE
1 9.7
2 9.9
3 10.5
4 11.5
5 12.7
6 14.0
7 15.4
8 17.0
9 18.5
10 19.9
11 21.4
12 22.8
13 24.4
14 25.8
15 27.5
16 28.9
17 30.4
18 31.8
19 33.4
20 34.9
21 36.3
22 37.9
23 39.3
24 40.8
25 42.3
26 43.7
27 45.1
28 46.6
29 48.0
30 49.6
31 51.0
32 52.5
33 54.0
34 55.4
35 56.9
36 58.4
37 59.9
38 61.4
39 63.0
40 64.1
41 64.3



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20289
 SCAN # 21 FRAME # 14573 ANGLE 9.454 TO FRAME # 15203 HUBLE 64.540 CRITICAL AMP AT CELL 34
 OPTION # 31



R

1	145.8
2	156.1
3	166.4
4	176.7
5	187.0
6	197.3
7	207.5
8	217.8
9	228.1
10	238.4
11	248.7
12	258.9
13	269.2
14	279.5
15	300.1

ANGLE

1	9.7
2	9.9
3	10.5
4	11.5
5	12.7
6	14.0
7	15.4
8	17.0
9	18.5
10	19.9
11	21.4
12	22.8
13	24.4
14	25.8
15	27.5
16	28.9
17	30.4
18	31.8
19	33.4
20	34.9
21	36.3
22	37.9
23	39.3
24	40.8
25	42.3
26	43.7
27	45.1
28	46.6
29	48.0
30	49.6
31	51.0
32	52.5
33	54.0
34	55.4
35	56.9
36	58.4
37	59.9
38	61.4
39	63.0
40	64.1
41	64.3

U * I_{max}, R, A DISPLAY

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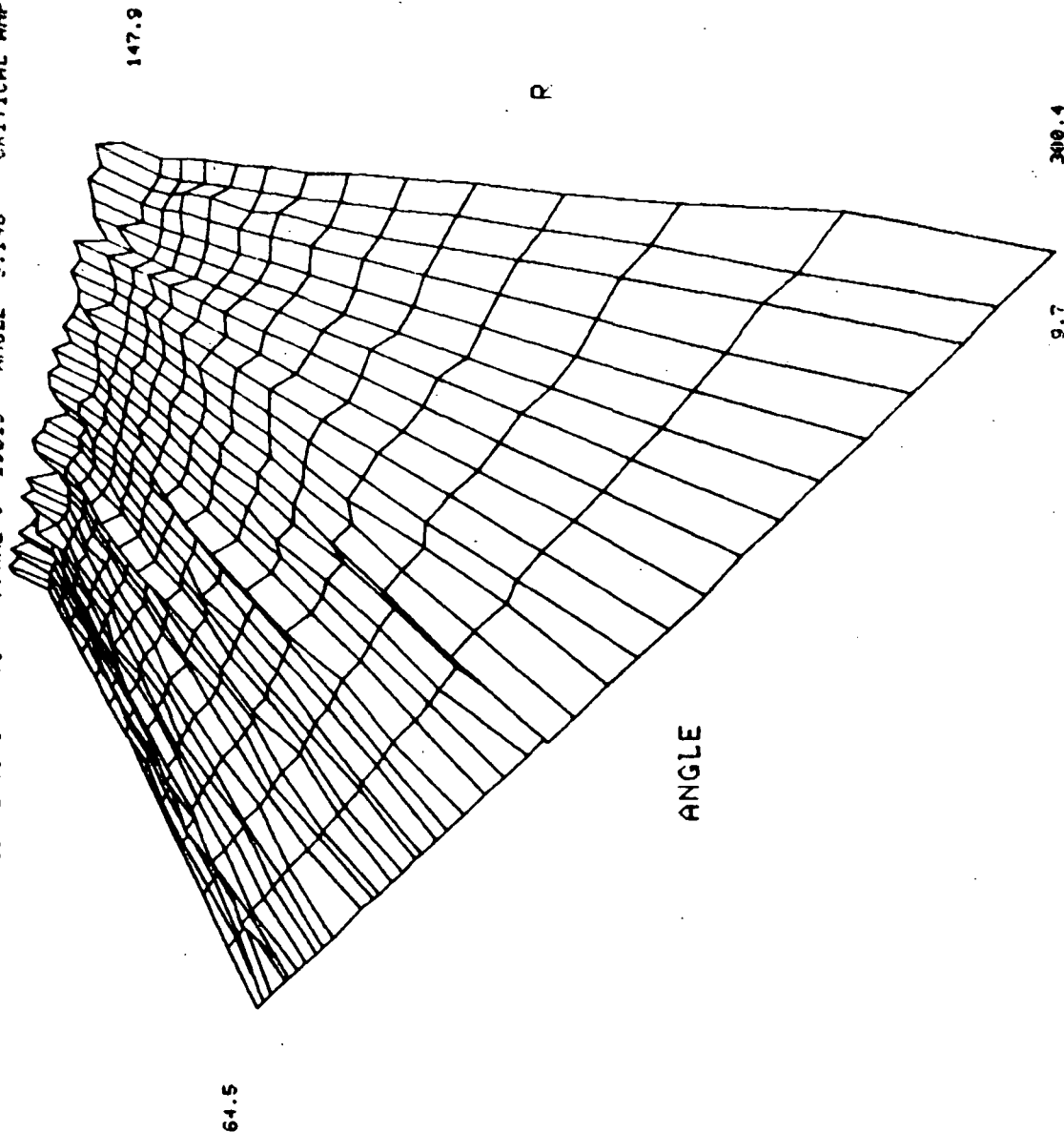
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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20839
SCAN # 22 FRAME # 15203 ANGLE 64.540 TO FRAME # 15815 ANGLE 9.148 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 164.0
AVERAGE I - 80.8

ANGLE
1 64.5
2 64.1
3 63.3
4 62.4
5 61.3
6 60.0
7 58.4
8 56.9
9 55.4
10 53.9
11 52.4
12 50.9
13 49.4
14 48.0
15 46.5
16 45.1
17 43.7
18 42.2
19 40.7
20 39.2
21 37.7
22 36.2
23 34.7
24 33.2
25 31.7
26 30.3
27 28.7
28 27.3
29 25.8
30 24.2
31 22.7
32 21.3
33 19.7
34 18.2
35 16.7
36 15.1
37 13.6
38 12.1
39 10.6
40 9.7



IMAX, R, A DISPLAY

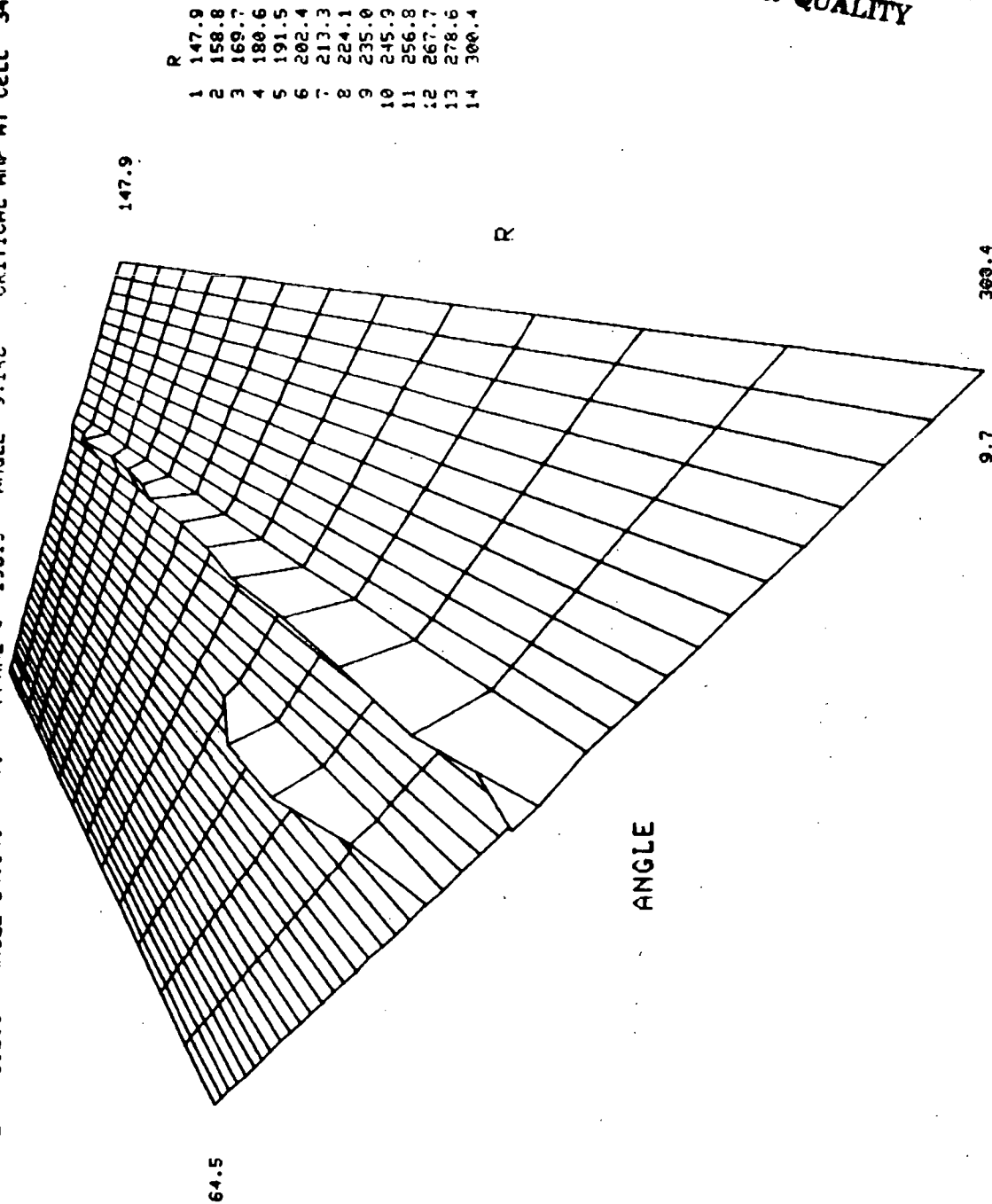
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 * SCAN # 22 FRAME # 15203 ANGLE 64.540 TO FRAME # 15815 ANGLE 9.148 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 116.0

AVERAGE I - 2.9

ANGLE
1 64.5
2 64.1
3 63.3
4 62.4
5 61.3
6 60.0
7 58.4
8 56.9
9 55.4
10 53.9
11 52.4
12 50.9
13 49.4
14 48.0
15 46.5
16 45.1
17 43.7
18 42.2
19 40.7
20 39.2
21 37.7
22 36.2
23 34.7
24 33.2
25 31.7
26 30.3
27 28.7
28 27.3
29 25.8
30 24.2
31 22.7
32 21.3
33 19.7
34 18.2
35 16.7
36 15.1
37 13.6
38 12.1
39 10.6
40 9.7



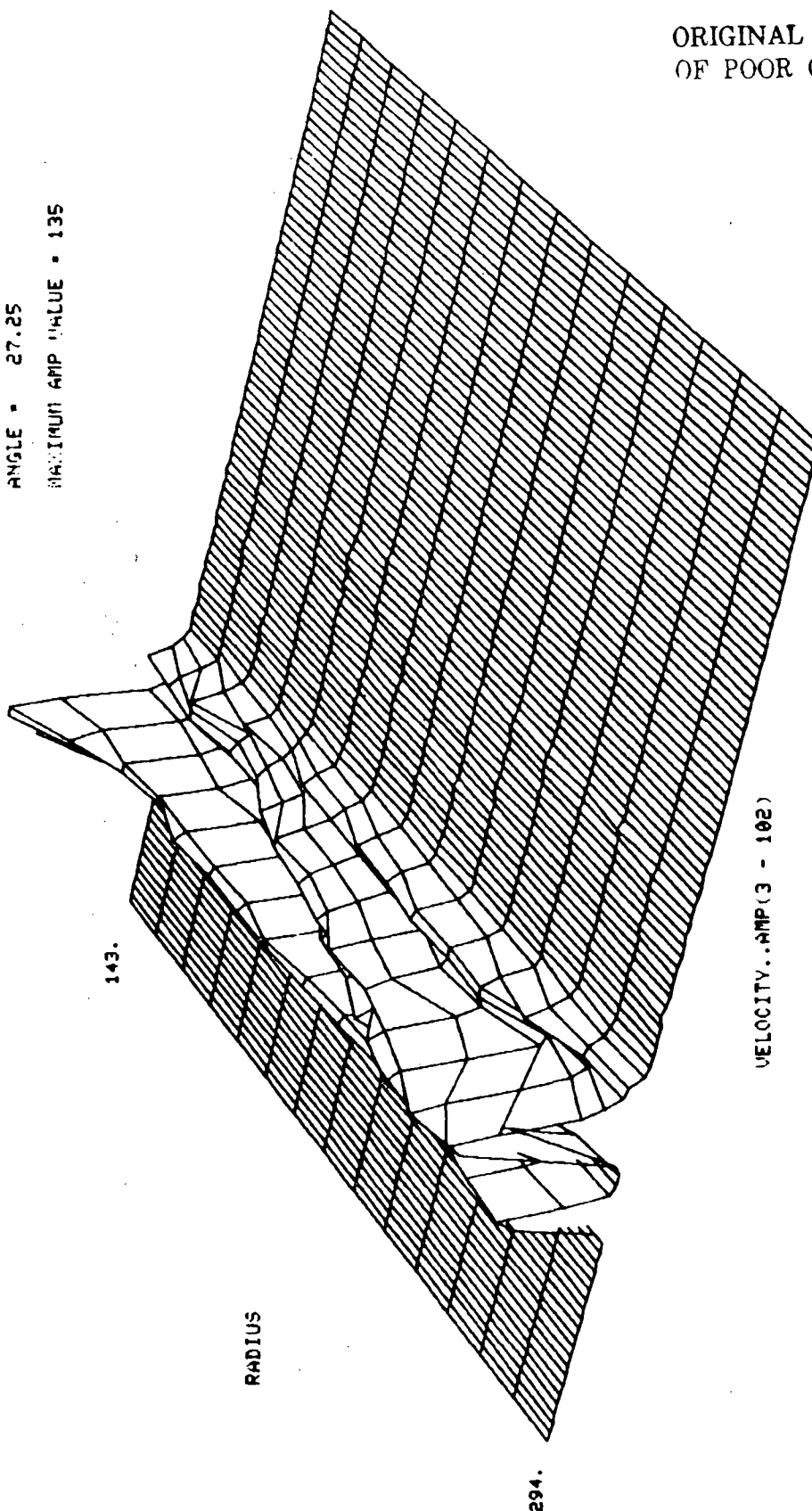
R
1 147.9
2 158.8
3 169.7
4 180.6
5 191.5
6 202.4
7 213.3
8 224.1
9 235.0
10 245.9
11 256.8
12 267.7
13 278.6
14 300.4

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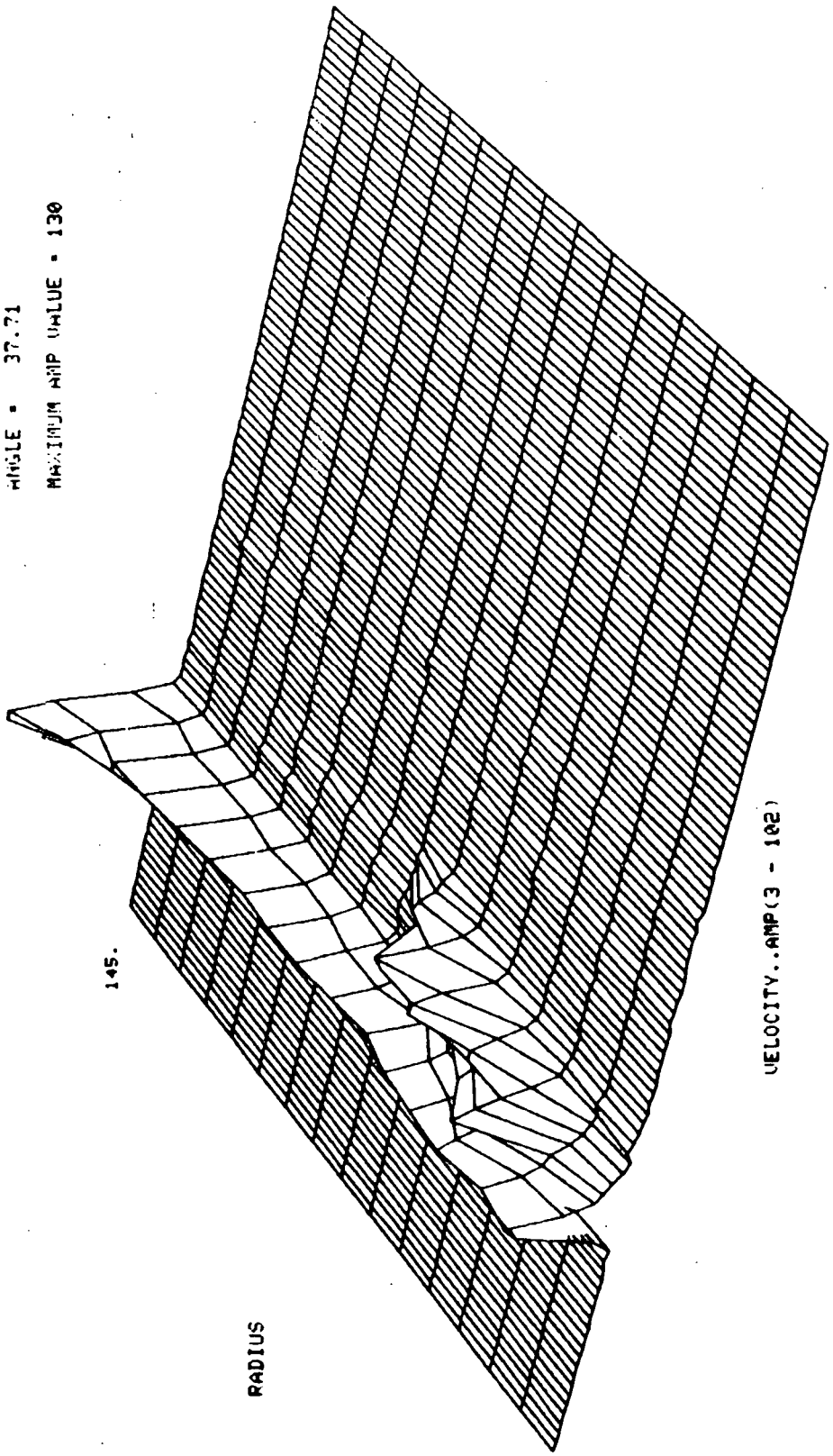
I, R, A DISPLAY AT VELOCITY CELL 34

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
SCAN # 22 FRAME # 15203 ANGLE 64.540 TO FRAME # 15815 ANGLE 9.143 CRITICAL AMP AT CELL 34
FRAME # 15612 TO 15627
ANGLE = 27.25
MAXIMUM AMP VALUE = 135



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20939
 SCAN # 22 FRAME # 15203 ANGLE 64.540 TO FRAME # 15315 ANGLE 9.148 CRITICAL AMP AT CELL 34
 FRAME # 15502 TO 15518
 ANGLE = 37.71
 MAXIMUM AMP VALUE = 130



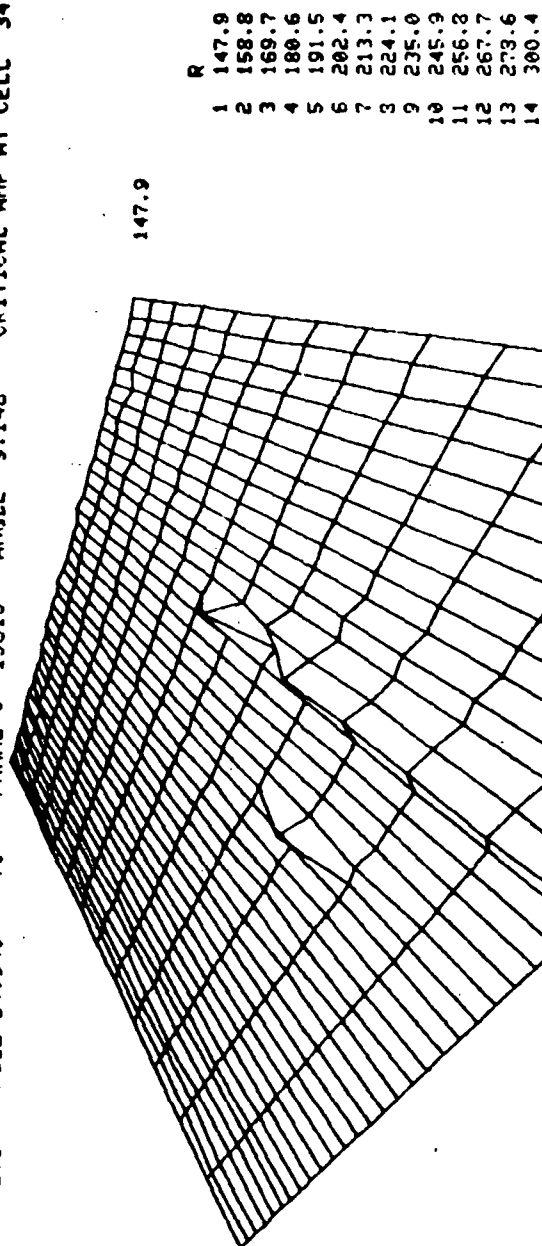
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 22 FRAME # 15203 ANGLE 64.540 TO FRAME # 15815 ANGLE 9.148 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U = 40.0

AVERAGE U = 26.9

ANGLE
 1 64.5
 2 64.1
 3 63.3
 4 62.4
 5 61.3
 6 60.0
 7 58.4
 8 56.9
 9 55.4
 10 53.9
 11 52.4
 12 50.9
 13 49.4
 14 48.0
 15 46.5
 16 45.1
 17 43.7
 18 42.2
 19 40.7
 20 39.2
 21 37.7
 22 36.2
 23 34.7
 24 33.2
 25 31.7
 26 30.3
 27 28.7
 28 27.3
 29 25.8
 30 24.2
 31 22.7
 32 21.3
 33 19.7
 34 18.2
 35 16.7
 36 15.1
 37 13.6
 38 12.1
 39 10.6
 40 9.7



R
 1 147.9
 2 158.8
 3 169.7
 4 180.6
 5 191.5
 6 202.4
 7 213.3
 8 224.1
 9 235.0
 10 245.9
 11 256.8
 12 267.7
 13 278.6
 14 300.4

U, R, A DISPLAY (VELOCITY AT I MAX)

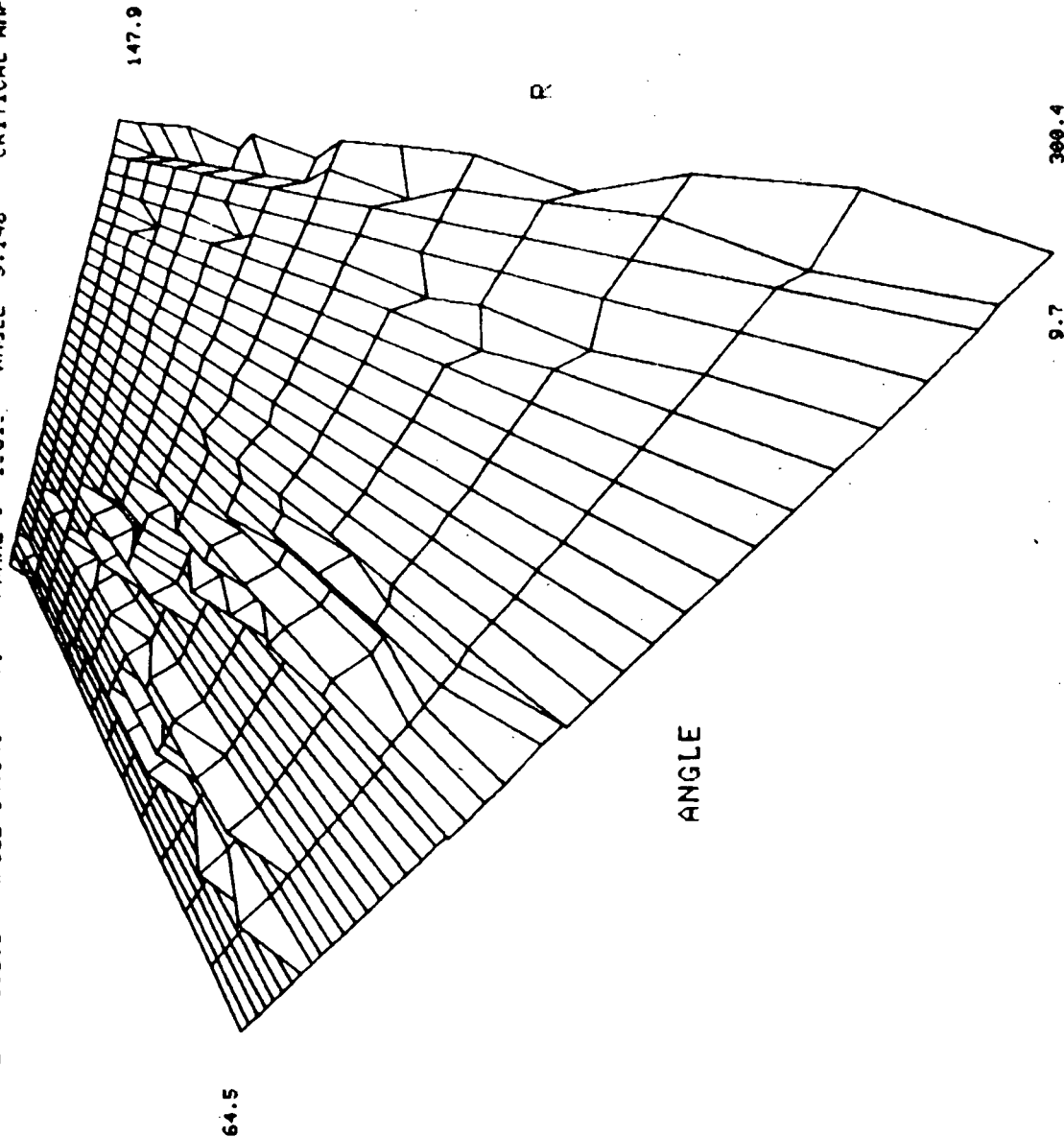
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 22 FRAME # 15203 ANGLE 64.540 TO FRAME # 15815 ANGLE 9.146 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 41.0
 AVERAGE U - 18.6

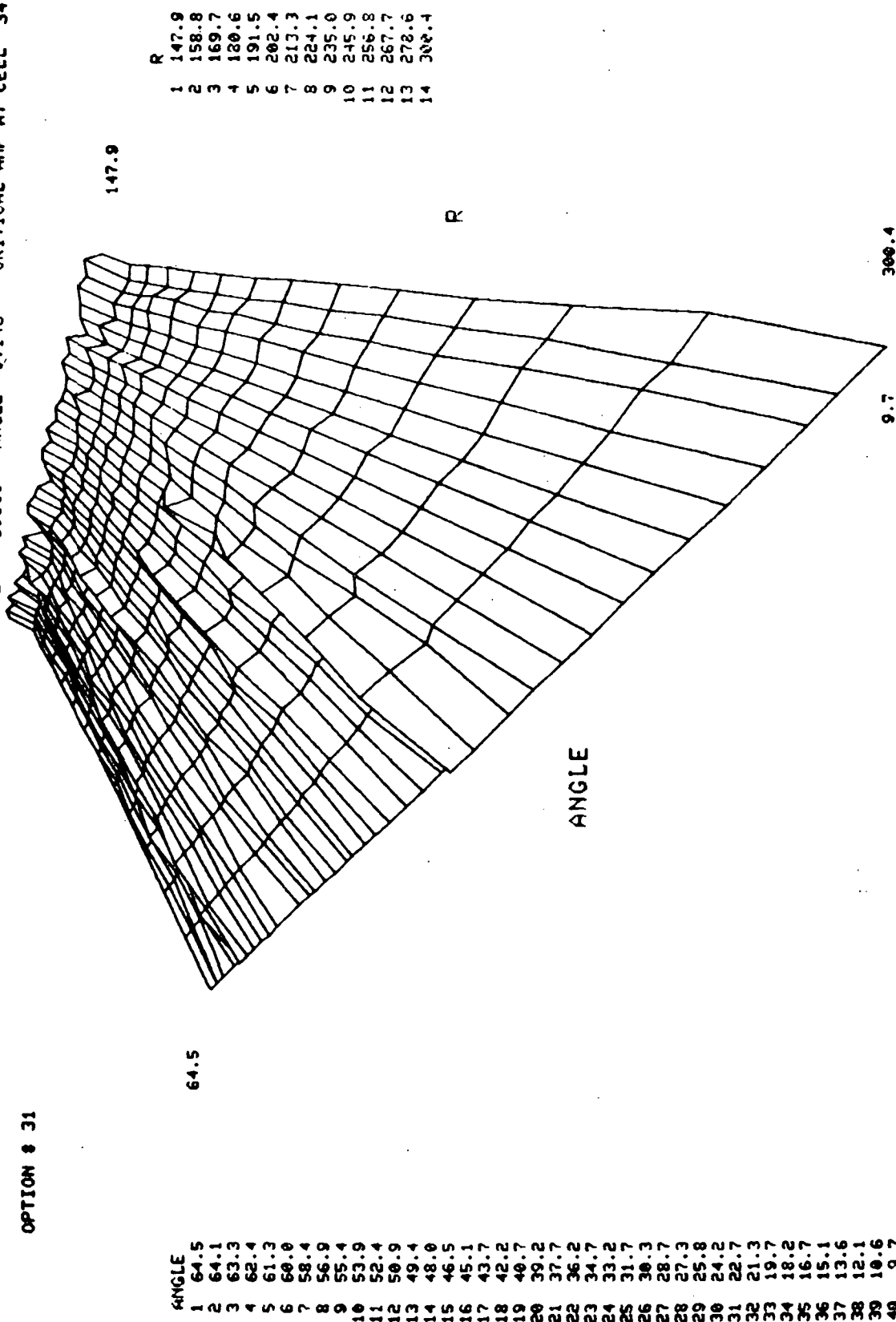
ANGLE
1 64.5
2 64.1
3 63.3
4 62.4
5 61.3
6 60.0
7 58.4
8 56.9
9 55.4
10 53.9
11 52.4
12 50.9
13 49.4
14 48.0
15 46.5
16 45.1
17 43.7
18 42.2
19 40.7
20 39.2
21 37.7
22 36.2
23 34.7
24 33.2
25 31.7
26 30.3
27 28.7
28 27.3
29 25.8
30 24.2
31 22.7
32 21.3
33 19.7
34 18.2
35 16.7
36 15.1
37 13.6
38 12.1
39 10.6
40 9.7

R
1 147.9
2 158.8
3 169.7
4 180.6
5 191.5
6 202.4
7 213.3
8 224.1
9 235.0
10 245.9
11 256.8
12 267.7
13 278.6
14 300.4



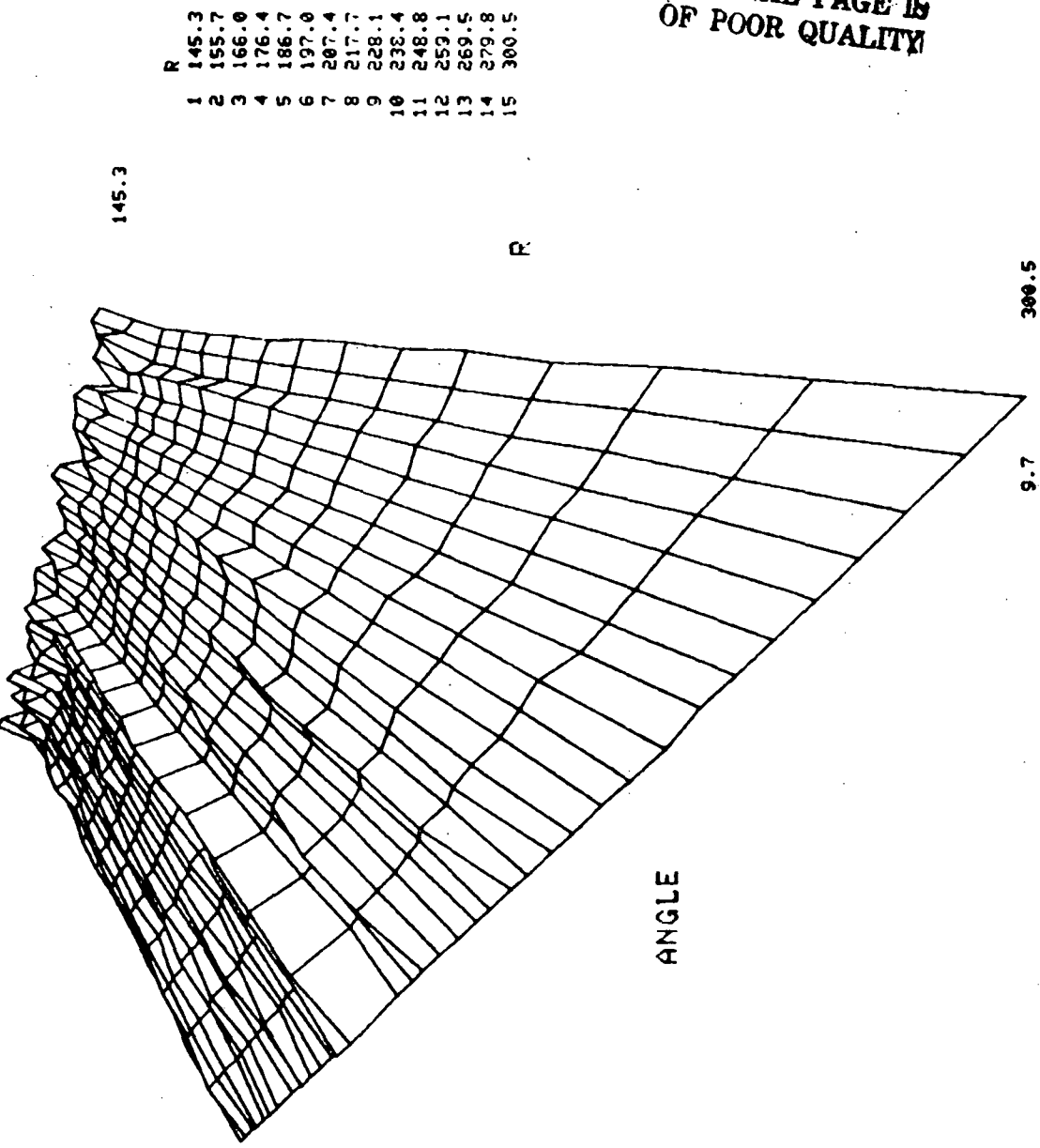
U_{max}, R, A DISPLAY AMPLITUDE THRESHOLD AT I - 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 22 FRAME # 15203 ANGLE 64.540 TO FRAME # 15815 ANGLE 9.148 CRITICAL AMP AT CELL 34
 OPTION # 31



U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
SCAN # 23 FRAME # 15815 ANGLE 9.148 TO FRAME # 16433 ANGLE 64.468 CRITICAL AMP AT CELL 34



OPTION # 11

MAXIMUM I - 170.0
AVERAGE I - 83.4

- R
- 1 145.3
 - 2 155.7
 - 3 166.0
 - 4 176.4
 - 5 186.7
 - 6 197.0
 - 7 207.4
 - 8 217.7
 - 9 228.1
 - 10 238.4
 - 11 248.8
 - 12 259.1
 - 13 269.5
 - 14 279.8
 - 15 300.5

- ANGLE
- 1 9.7
 - 2 10.2
 - 3 11.0
 - 4 12.1
 - 5 13.3
 - 6 14.6
 - 7 16.2
 - 8 17.7
 - 9 19.2
 - 10 20.8
 - 11 22.2
 - 12 23.7
 - 13 25.2
 - 14 26.7
 - 15 28.1
 - 16 29.7
 - 17 31.2
 - 18 32.7
 - 19 34.2
 - 20 35.7
 - 21 37.1
 - 22 38.6
 - 23 40.1
 - 24 41.6
 - 25 43.0
 - 26 44.4
 - 27 46.0
 - 28 47.3
 - 29 48.9
 - 30 50.3
 - 31 51.8
 - 32 53.3
 - 33 54.7
 - 34 56.3
 - 35 57.7
 - 36 59.3
 - 37 60.8
 - 38 62.3
 - 39 63.7
 - 40 64.4

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IMAX, R, A DISPLAY

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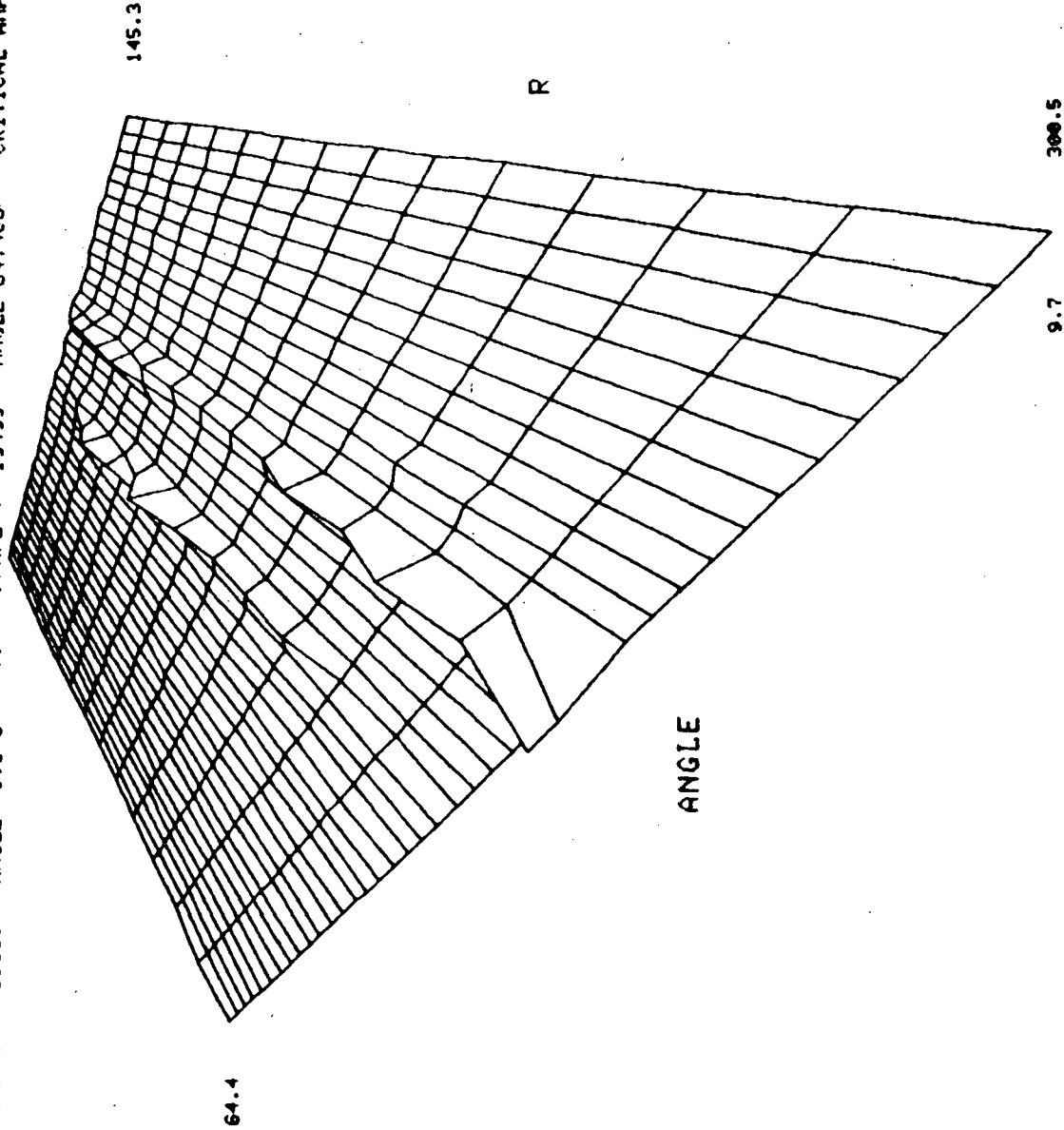
NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 1 OF 2-20889
SCAN # 23 FRAME # 15815 ANGLE 9.148 TO FRAME # 15433 ANGLE 64.468 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 70.0

AVERAGE I - 2.1

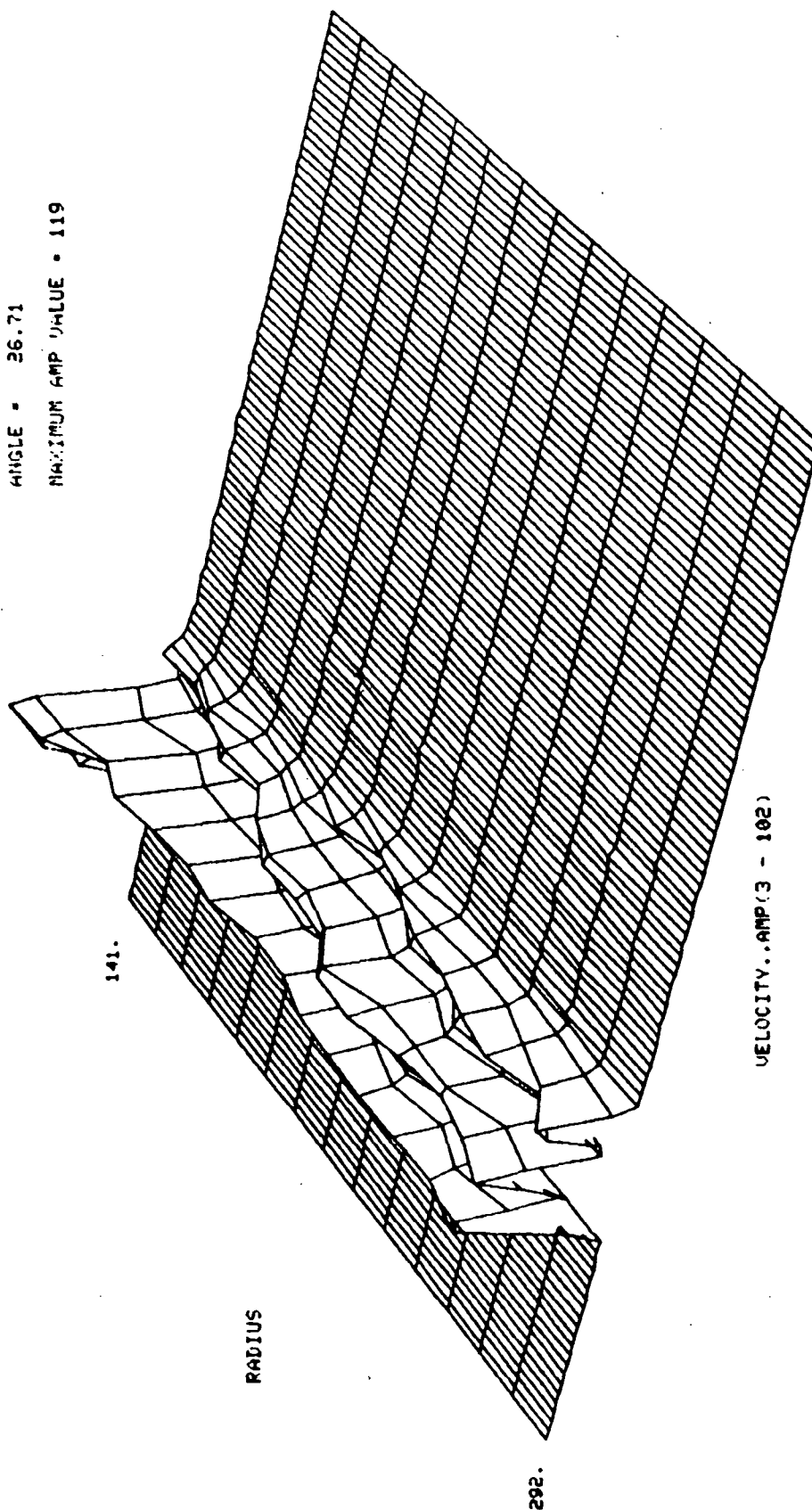
R
1 145.3
2 155.7
3 166.0
4 176.4
5 186.7
6 197.0
7 207.4
8 217.7
9 228.1
10 238.4
11 248.8
12 259.1
13 269.5
14 279.3
15 300.5



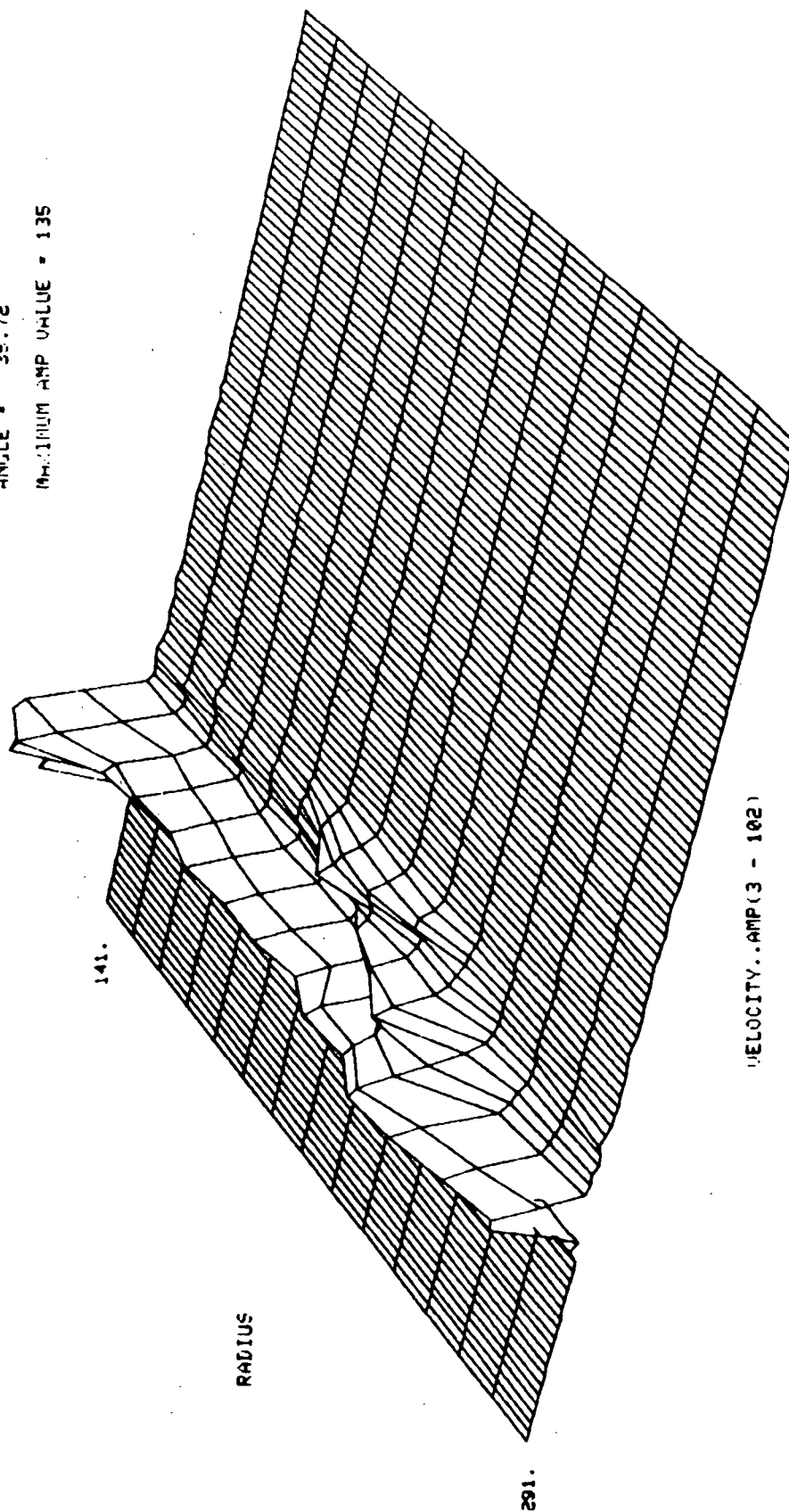
ANGLE
1 9.7
2 10.2
3 11.0
4 12.1
5 13.3
6 14.6
7 16.2
8 17.7
9 19.2
10 20.8
11 22.2
12 23.7
13 25.2
14 26.7
15 28.1
16 29.7
17 31.2
18 32.7
19 34.2
20 35.7
21 37.1
22 38.6
23 40.1
24 41.6
25 43.0
26 44.4
27 46.0
28 47.3
29 48.9
30 50.3
31 51.8
32 53.3
33 54.7
34 56.3
35 57.7
36 59.3
37 60.8
38 62.3
39 63.7
40 64.4

I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20389
 SCAN # 23 FRAME # 15815 ANGLE 9.143 TO FRAME # 16433 ANGLE 64.468 CRITICAL AMP AT CELL 34
 FRAME # 16019 TO 16034
 ANGLE = 26.71
 MAXIMUM AMP VALUE = 119



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-208S9
 SCAN # 23 FRAME # 15815 ANGLE 9.148 TO FRAME # 16433 ANGLE 64.468 CRITICAL AMP AT CELL 34
 FRAME # 16113 TO 16128
 ANGLE # 35.72
 MAXIMUM AMP VALUE = 135



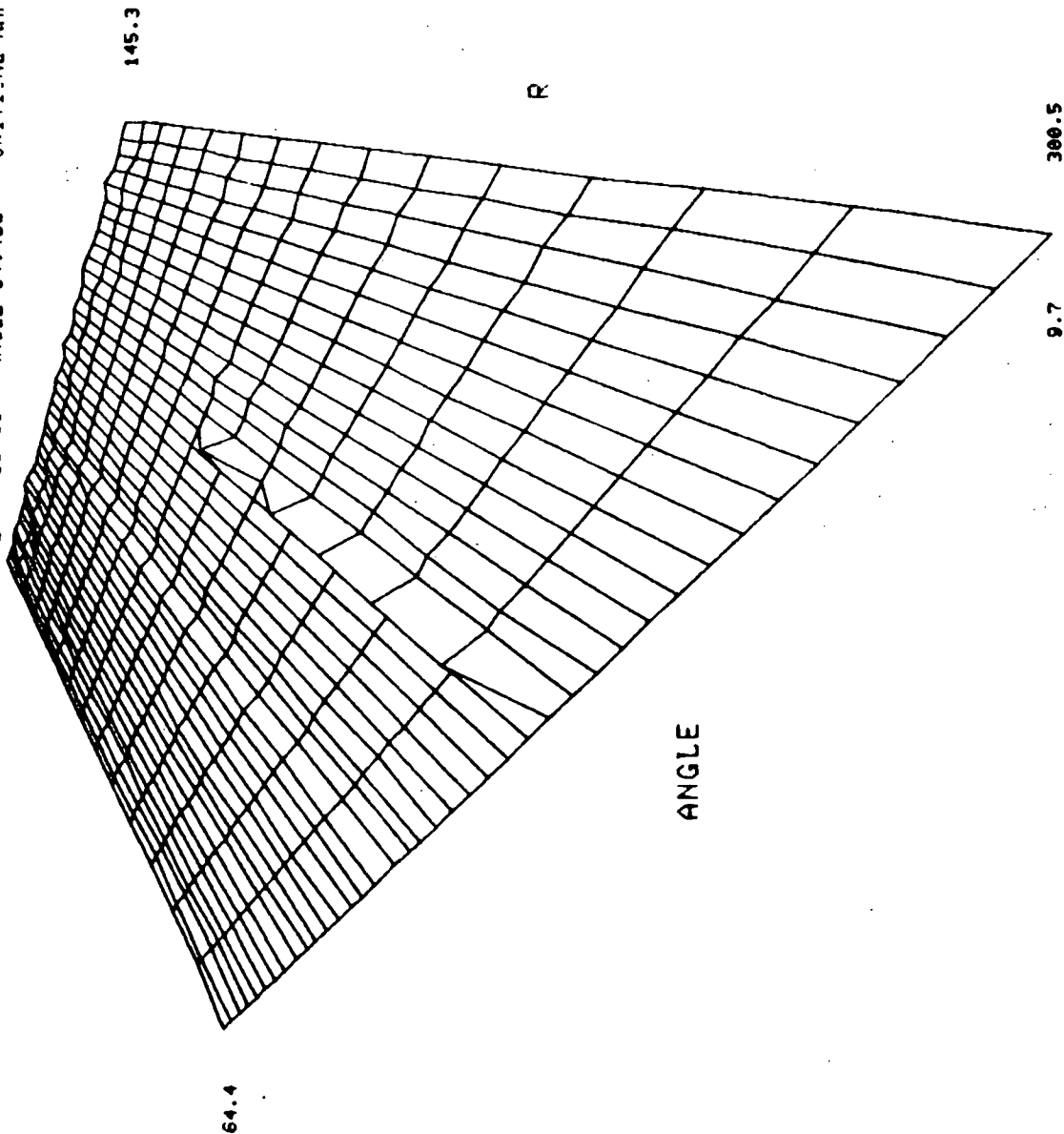
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 23 FRAME # 15815 ANGLE 9.149 TO FRAME # 16433 ANGLE 64.463 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 40.0
 AVERAGE U - 26.8

ANGLE
 1 9.7
 2 10.2
 3 11.0
 4 12.1
 5 13.3
 6 14.6
 7 16.2
 8 17.7
 9 19.2
 10 20.8
 11 22.2
 12 23.7
 13 25.2
 14 26.7
 15 28.1
 16 29.7
 17 31.2
 18 32.7
 19 34.2
 20 35.7
 21 37.1
 22 38.6
 23 40.1
 24 41.6
 25 43.0
 26 44.4
 27 46.0
 28 47.3
 29 48.9
 30 50.3
 31 51.8
 32 53.3
 33 54.7
 34 56.3
 35 57.7
 36 59.3
 37 60.8
 38 62.3
 39 63.7
 40 64.4

R
 1 145.3
 2 155.7
 3 166.0
 4 176.4
 5 186.7
 6 197.0
 7 207.4
 8 217.7
 9 228.1
 10 238.4
 11 248.8
 12 259.1
 13 269.5
 14 279.8
 15 300.5



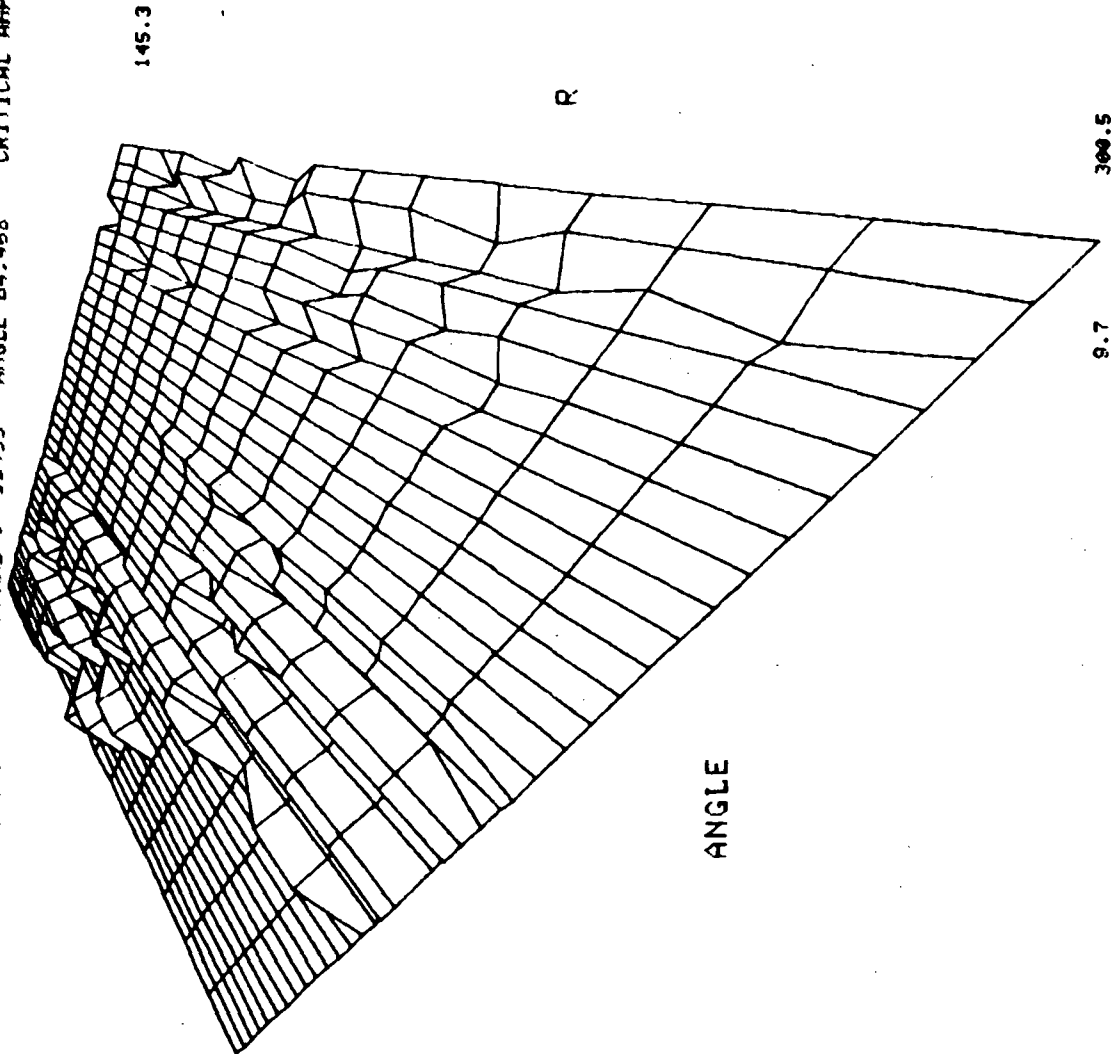
U, R, A DISPLAY (VELOCITY AT I_max)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20889
 SCAN # 23 FRAME # 15815 ANGLE 9.142 TO FRAME # 16433 ANGLE 64.455 CRITICAL APP AT CELL 34

OPTION # 22

MAXIMUM U - 41.0
 AVERAGE U - 18.6

ANGLE
1 9.7
2 10.2
3 11.0
4 12.1
5 13.3
6 14.6
7 16.2
8 17.7
9 19.2
10 20.8
11 22.2
12 23.7
13 25.2
14 26.7
15 28.1
16 29.7
17 31.2
18 32.7
19 34.2
20 35.7
21 37.1
22 38.6
23 40.1
24 41.6
25 43.0
26 44.4
27 46.0
28 47.3
29 48.9
30 50.3
31 51.8
32 53.3
33 54.7
34 56.3
35 57.7
36 59.3
37 60.8
38 62.3
39 63.7
40 64.4

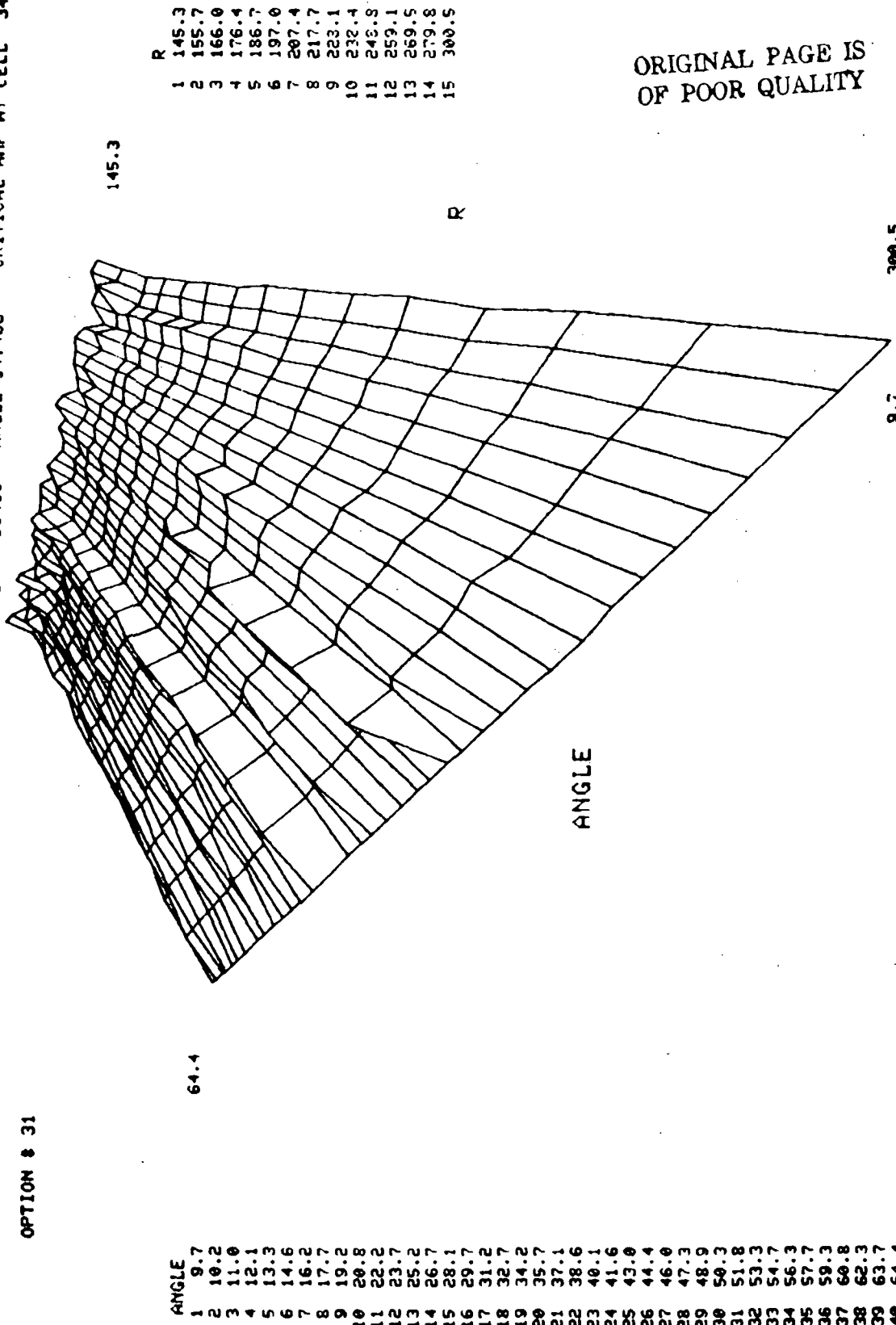


R
1 145.3
2 155.7
3 166.0
4 176.4
5 186.7
6 197.0
7 207.4
8 217.7
9 228.1
10 238.4
11 248.8
12 259.1
13 269.5
14 279.8
15 300.5

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U_{max}, R, A DISPLAY AMPLITUDE THRESHOLD AT I - 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 1 OF 2-20383
 FRAME # 15815 ANGLE 9.148 TO FRAME # 16433 ANGLE 64.462 CRITICAL MAP AT CELL 34
 OPTION # 31



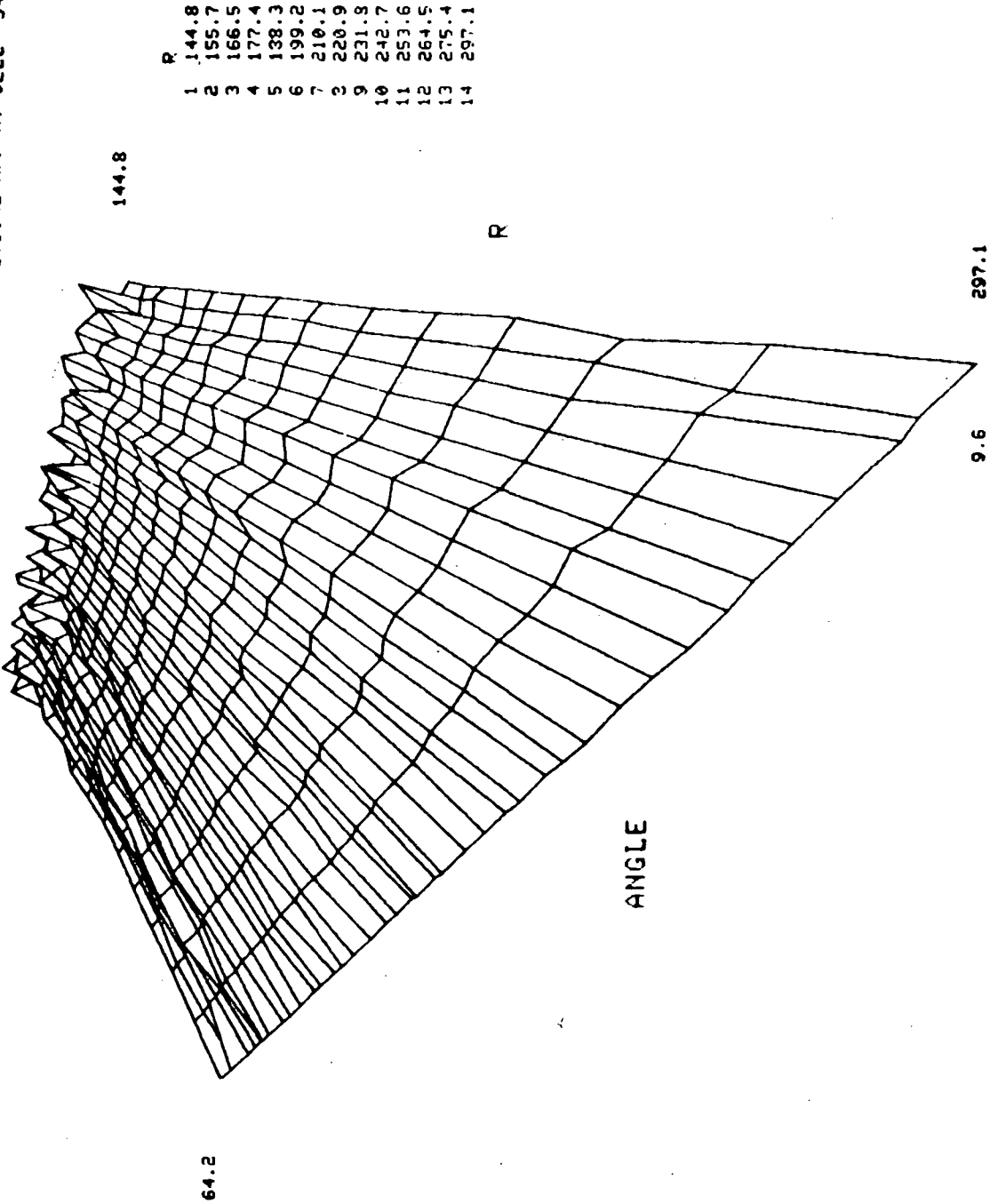
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
SCAN # 24 FRAME # 16433 ANGLE 64.468 TO FRAME # 17060 ANGLE 9.446 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 169.0

AVERAGE I - 75.7

ANGLE
1 64.2
2 64.2
3 63.7
4 62.9
5 61.8
6 60.5
7 59.1
8 57.6
9 56.1
10 54.6
11 53.0
12 51.6
13 50.1
14 48.6
15 47.2
16 45.7
17 44.2
18 42.8
19 41.4
20 39.9
21 38.4
22 37.0
23 35.4
24 34.0
25 32.4
26 30.9
27 29.5
28 27.9
29 26.4
30 24.9
31 23.4
32 21.8
33 20.4
34 18.9
35 17.4
36 15.8
37 14.2
38 12.7
39 11.3
40 10.1
41 9.6



R
1 144.8
2 155.7
3 166.5
4 177.4
5 188.3
6 199.2
7 210.1
8 220.9
9 231.8
10 242.7
11 253.6
12 264.5
13 275.4
14 287.1

IMAX, R, A DISPLAY

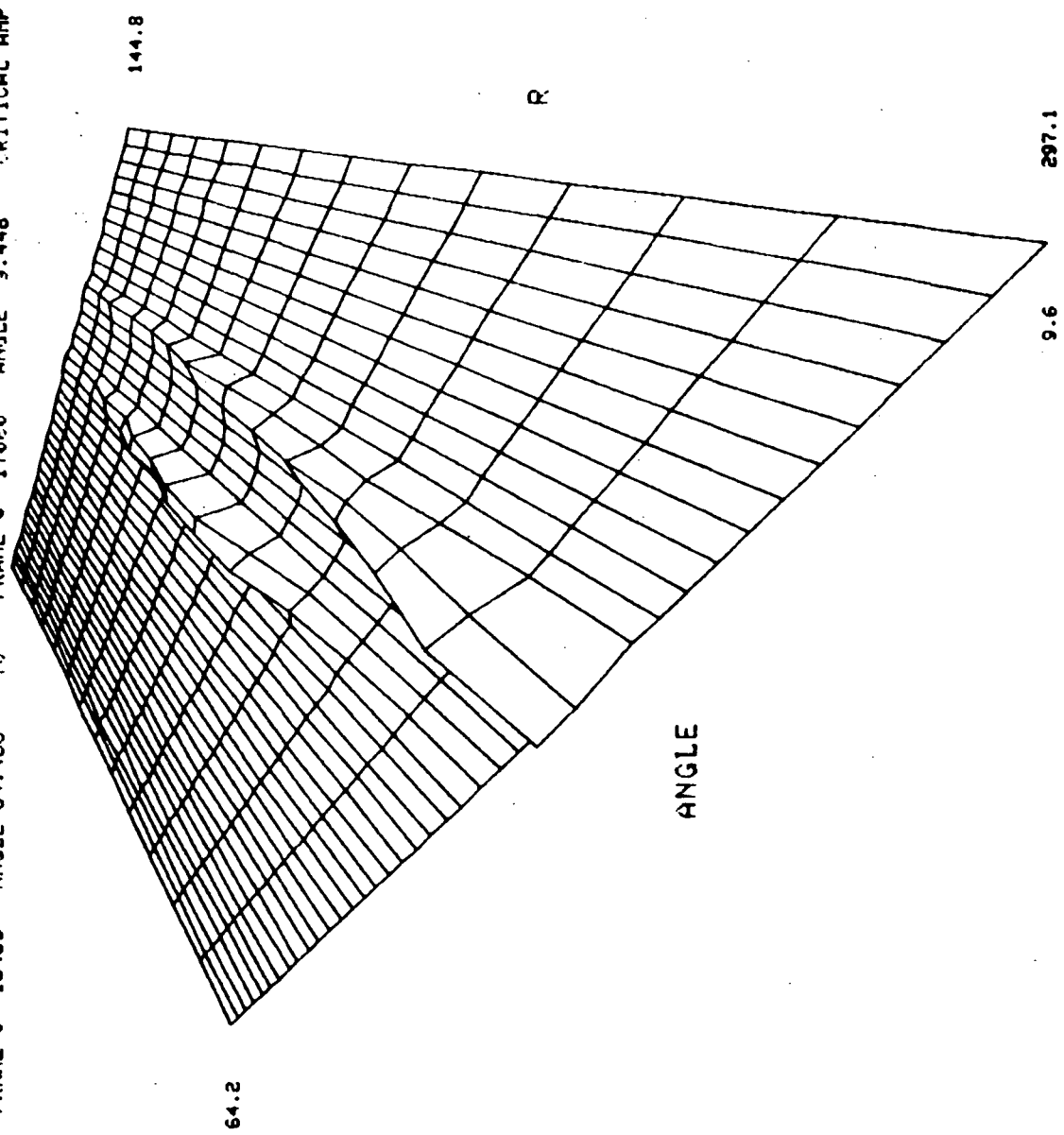
2-4

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 24 FRAME # 16433 ANGLE 64.468 TO FRAME # 17060 ANGLE 9.446 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 81.0
 AVERAGE I - 2.7

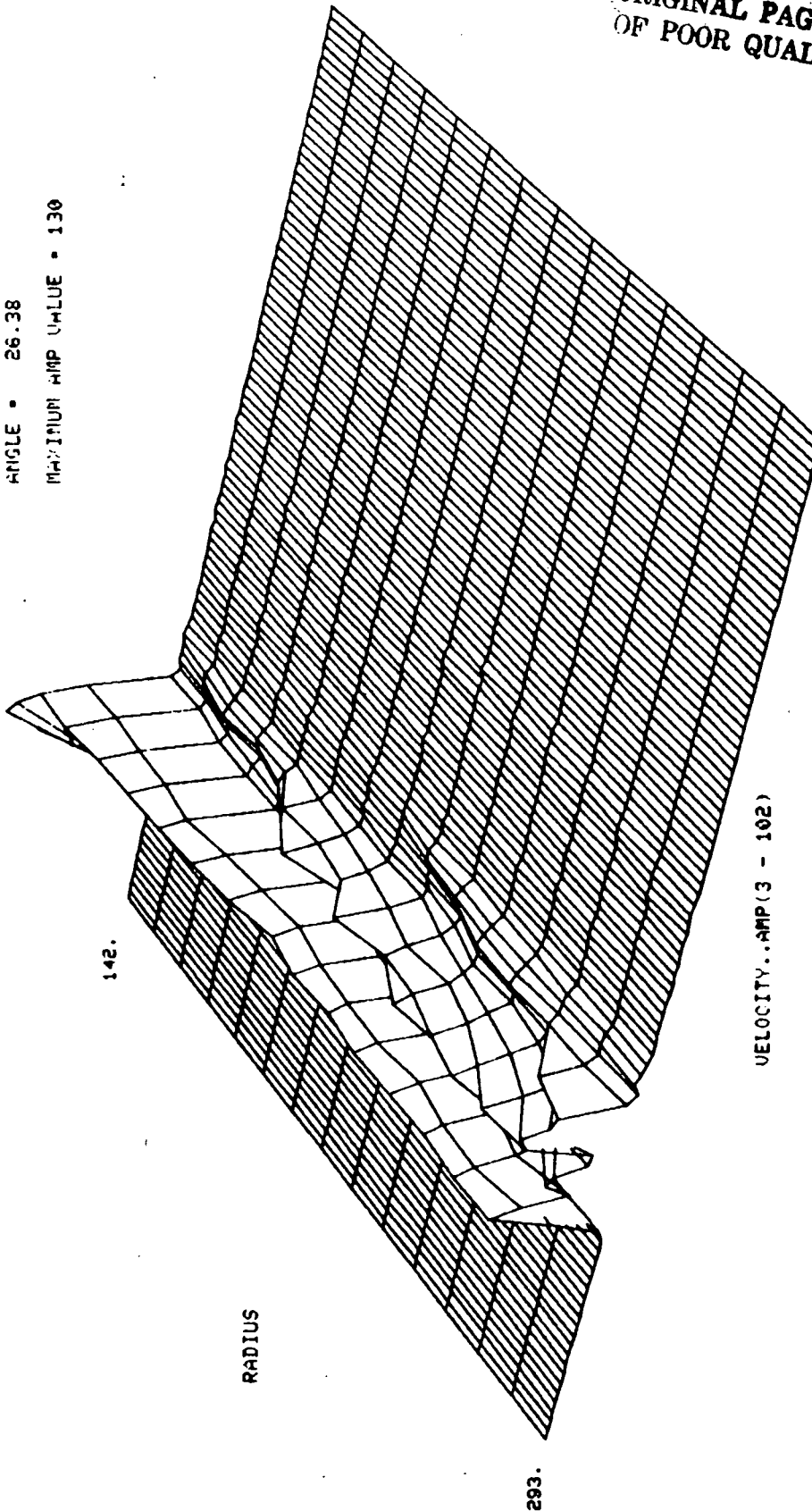
- R
- 1 144.8
- 2 155.7
- 3 166.5
- 4 177.4
- 5 188.3
- 6 199.2
- 7 210.1
- 8 220.9
- 9 231.8
- 10 242.7
- 11 253.6
- 12 264.5
- 13 275.4
- 14 287.1



- ANGLE
- 1 64.2
- 2 64.2
- 3 63.7
- 4 62.9
- 5 61.8
- 6 60.5
- 7 59.1
- 8 57.6
- 9 56.1
- 10 54.6
- 11 53.0
- 12 51.6
- 13 50.1
- 14 48.6
- 15 47.2
- 16 45.7
- 17 44.2
- 18 42.8
- 19 41.4
- 20 39.9
- 21 38.4
- 22 37.0
- 23 35.4
- 24 34.0
- 25 32.4
- 26 30.9
- 27 29.5
- 28 27.9
- 29 26.4
- 30 24.9
- 31 23.4
- 32 21.8
- 33 20.4
- 34 18.9
- 35 17.4
- 36 15.8
- 37 14.2
- 38 12.7
- 39 11.3
- 40 10.1
- 41 9.6

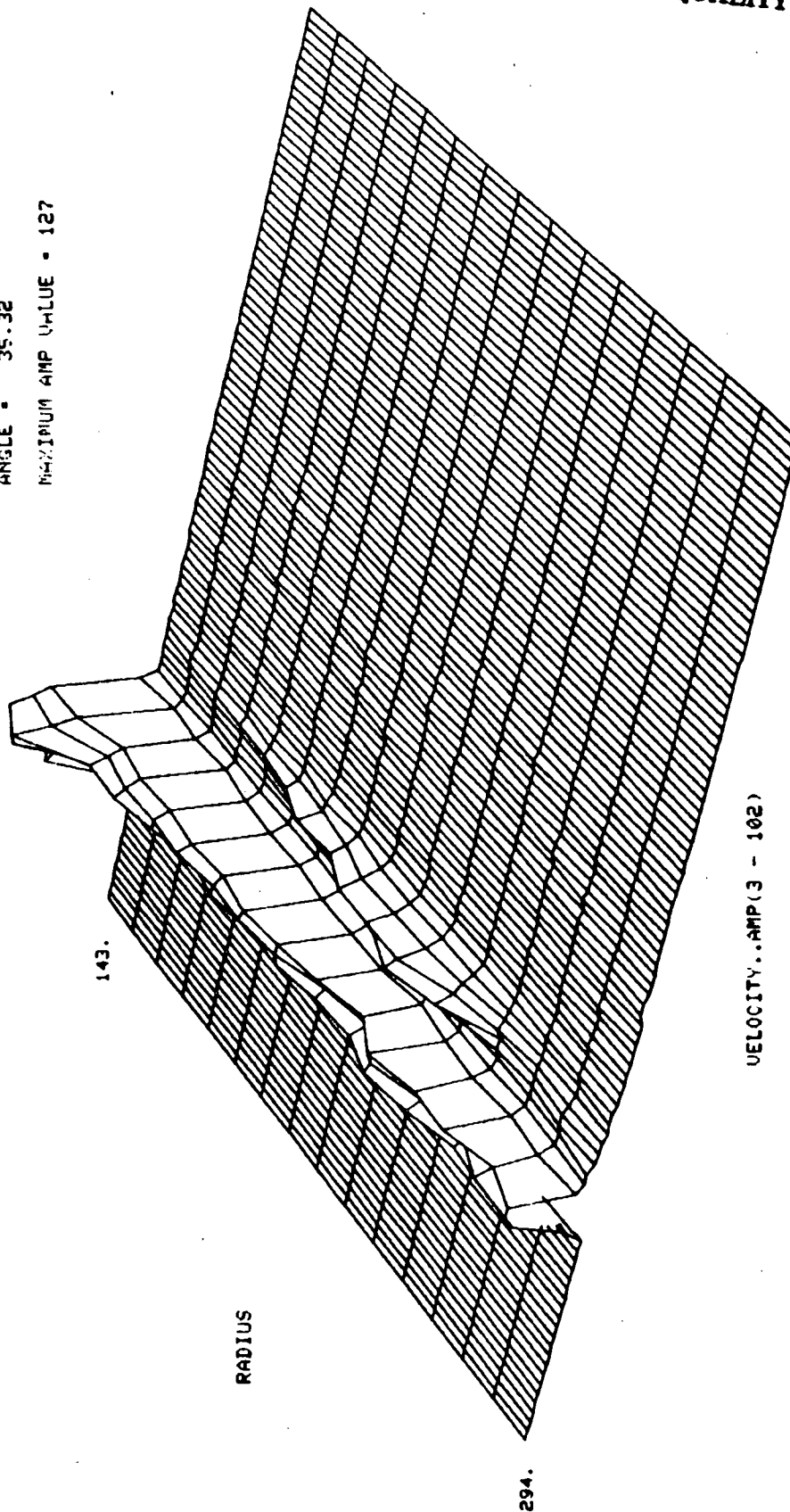
I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-286S3
 SCAN # 24 FRAME # 16433 ANGLE 64.468 TO FRAME # 17060 ANGLE 9.446 CRITICAL AMP AT CELL 34
 FRAME # 16864 TO 16879
 ANGLE = 26.38
 MAXIMUM AMP VALUE = 130



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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-23683
 SCNN # 24 FRAME # 16433 ANGLE 64.468 TO FRAME # 17060 ANGLE 9.446 CRITICAL AMP AT CELL 34
 FRAME # 16770 TO 16786
 ANGLE - 35.32
 MAXIMUM AMP VALUE - 127



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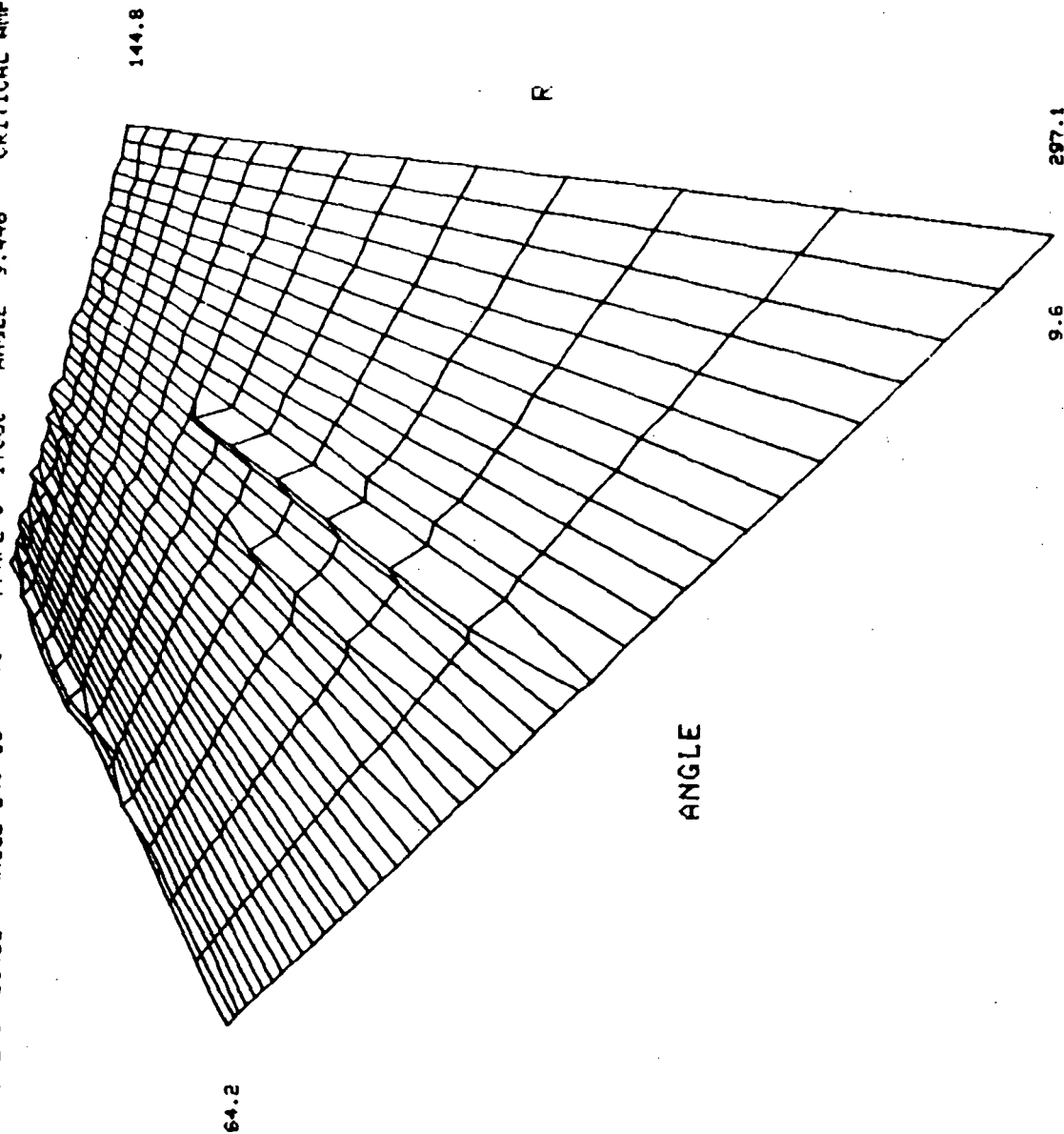
NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 2 OF 2-28683
SCAN # 24 FRAME # 16433 ANGLE 64.468 TO FRAME # 17060 ANGLE 9.446 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 38.0

AVERAGE U - 27.1

R
1 144.8
2 155.7
3 166.5
4 177.4
5 188.3
6 199.2
7 210.1
8 220.9
9 231.8
10 242.7
11 253.6
12 264.5
13 275.4
14 287.1

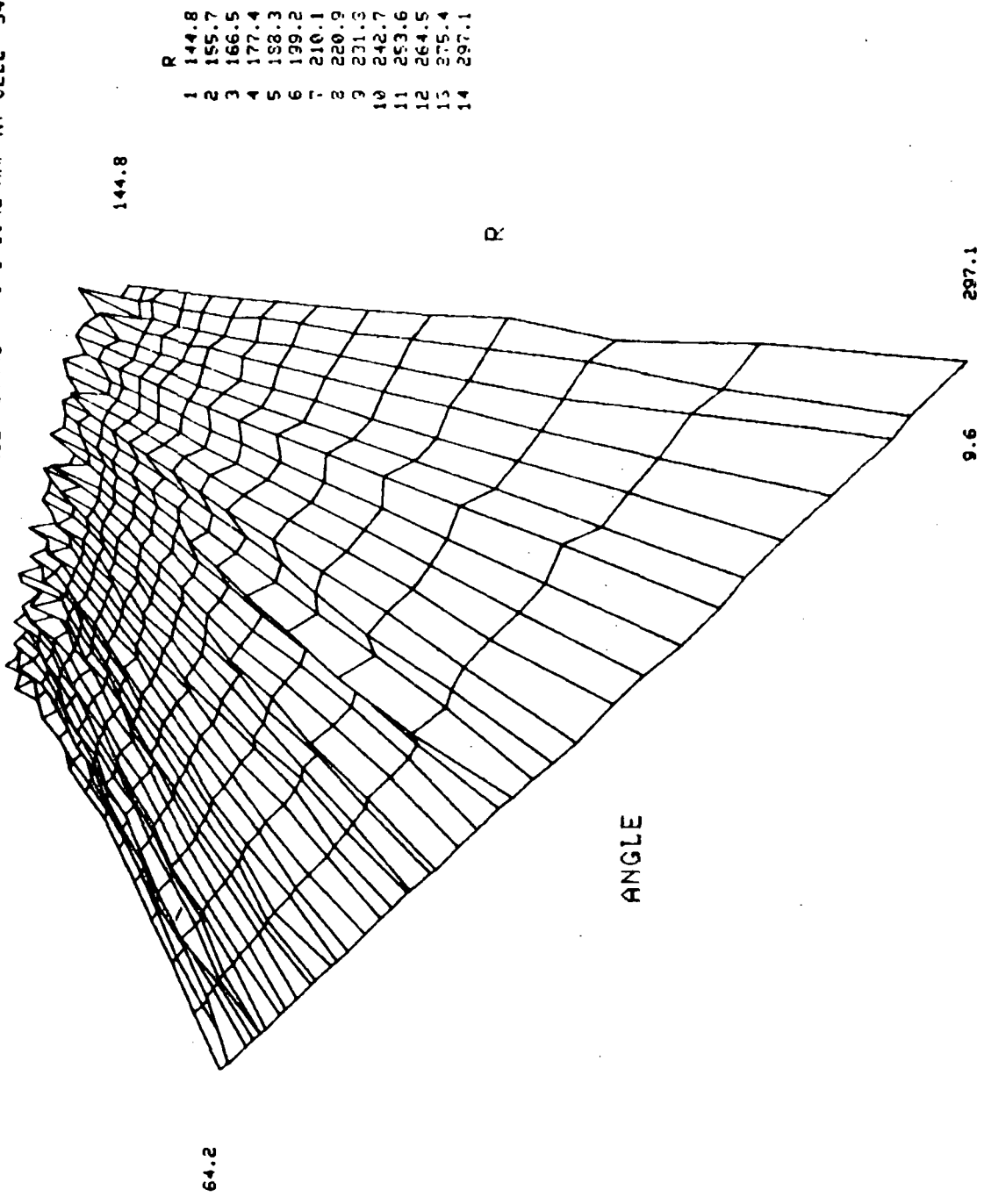


ANGLE
1 64.2
2 64.2
3 63.7
4 62.9
5 61.8
6 60.5
7 59.1
8 57.6
9 56.1
10 54.6
11 53.0
12 51.6
13 50.1
14 48.6
15 47.2
16 45.7
17 44.2
18 42.8
19 41.4
20 39.9
21 38.4
22 37.0
23 35.4
24 34.0
25 32.4
26 30.9
27 29.5
28 27.9
29 26.4
30 24.9
31 23.4
32 21.8
33 20.4
34 18.9
35 17.4
36 15.8
37 14.2
38 12.7
39 11.3
40 10.1
41 9.6

U, R, A DISPLAY (VELOCITY AT IMAX)

Page 230 unable to get this
Page

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-22693
 SCAN # 24 FRAME # 16433 ANGLE 64.463 TO FRAME # 17060 ANGLE 9.446 CRITICAL AMP AT CELL 34
 OPTION # 31



- R
- 1 144.8
 - 2 155.7
 - 3 166.5
 - 4 177.4
 - 5 188.3
 - 6 199.2
 - 7 210.1
 - 8 220.9
 - 9 231.3
 - 10 242.7
 - 11 253.6
 - 12 264.5
 - 13 275.4
 - 14 297.1

- ANGLE
- 1 64.2
 - 2 64.2
 - 3 63.7
 - 4 62.9
 - 5 61.8
 - 6 60.5
 - 7 59.1
 - 8 57.6
 - 9 56.1
 - 10 54.6
 - 11 53.0
 - 12 51.6
 - 13 50.1
 - 14 48.6
 - 15 47.2
 - 16 45.7
 - 17 44.2
 - 18 42.8
 - 19 41.4
 - 20 39.9
 - 21 38.4
 - 22 37.0
 - 23 35.4
 - 24 34.0
 - 25 32.4
 - 26 30.9
 - 27 29.5
 - 28 27.9
 - 29 26.4
 - 30 24.9
 - 31 23.4
 - 32 21.8
 - 33 20.4
 - 34 18.9
 - 35 17.4
 - 36 15.8
 - 37 14.2
 - 38 12.7
 - 39 11.3
 - 40 10.1
 - 41 9.6

U x I_{max}, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
SCAN # 25 FRAME # 17060 ANGLE 9.446 TO FRAME # 17631 ANGLE 64.702 CRITICAL AMP AT CELL 34

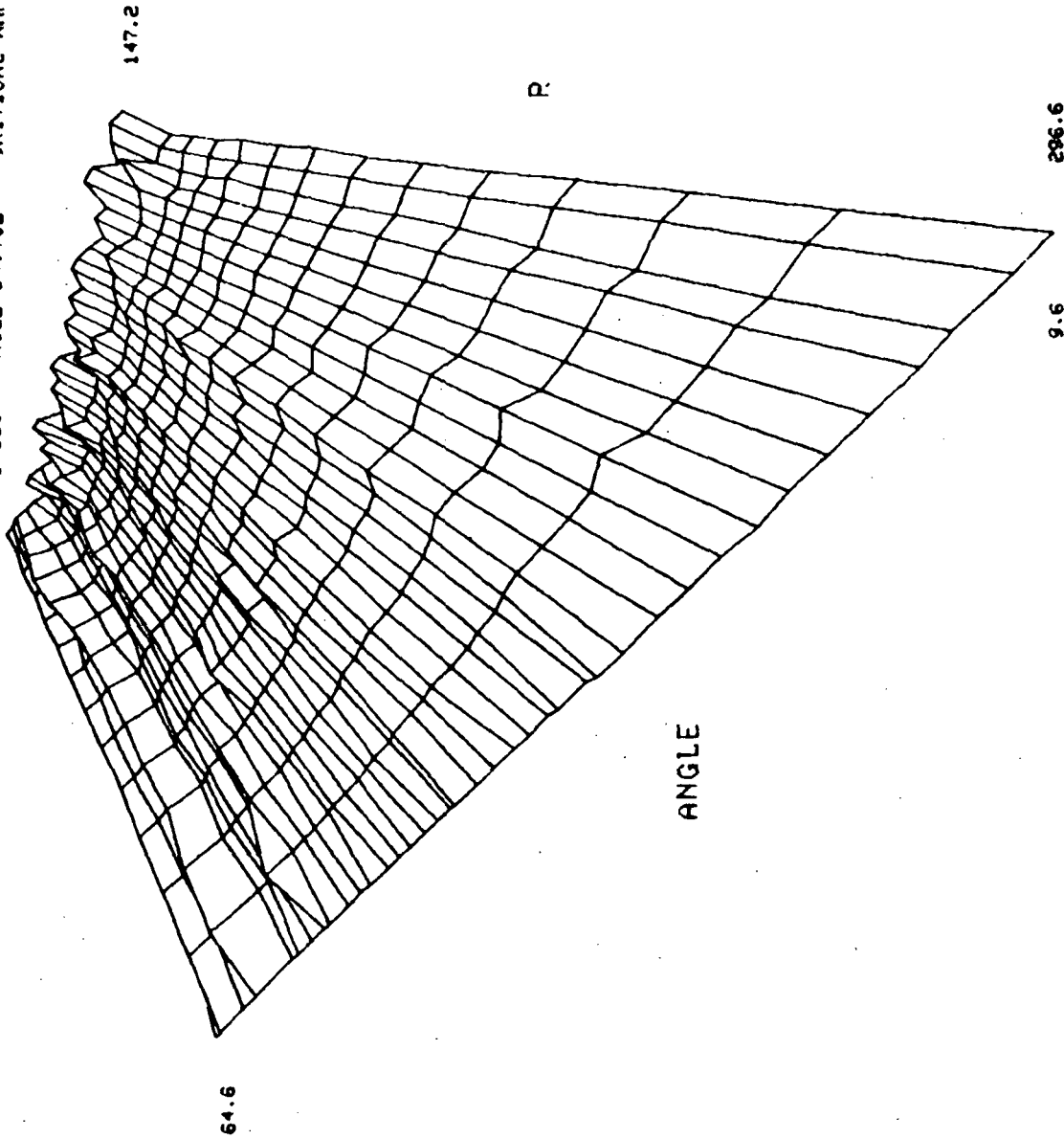
OPTION # 11

MAXIMUM I - 184.0

AVERAGE I - 83.1

ANGLE
1 9.6
2 10.0
3 10.6
4 11.6
5 12.7
6 14.0
7 15.5
8 17.1
9 18.6
10 20.1
11 21.5
12 23.0
13 24.5
14 26.0
15 27.5
16 29.0
17 30.6
18 32.1
19 33.5
20 35.0
21 36.5
22 37.9
23 39.4
24 40.9
25 42.4
26 43.9
27 45.2
28 46.7
29 48.1
30 49.7
31 51.1
32 52.6
33 54.0
34 55.6
35 57.1
36 58.5
37 60.1
38 61.7
39 63.1
40 64.2
41 64.6

R
1 147.2
2 157.9
3 168.5
4 179.2
5 189.9
6 200.6
7 211.2
8 221.9
9 232.6
10 243.2
11 253.9
12 264.6
13 275.2
14 286.6



Imax, R, A DISPLAY

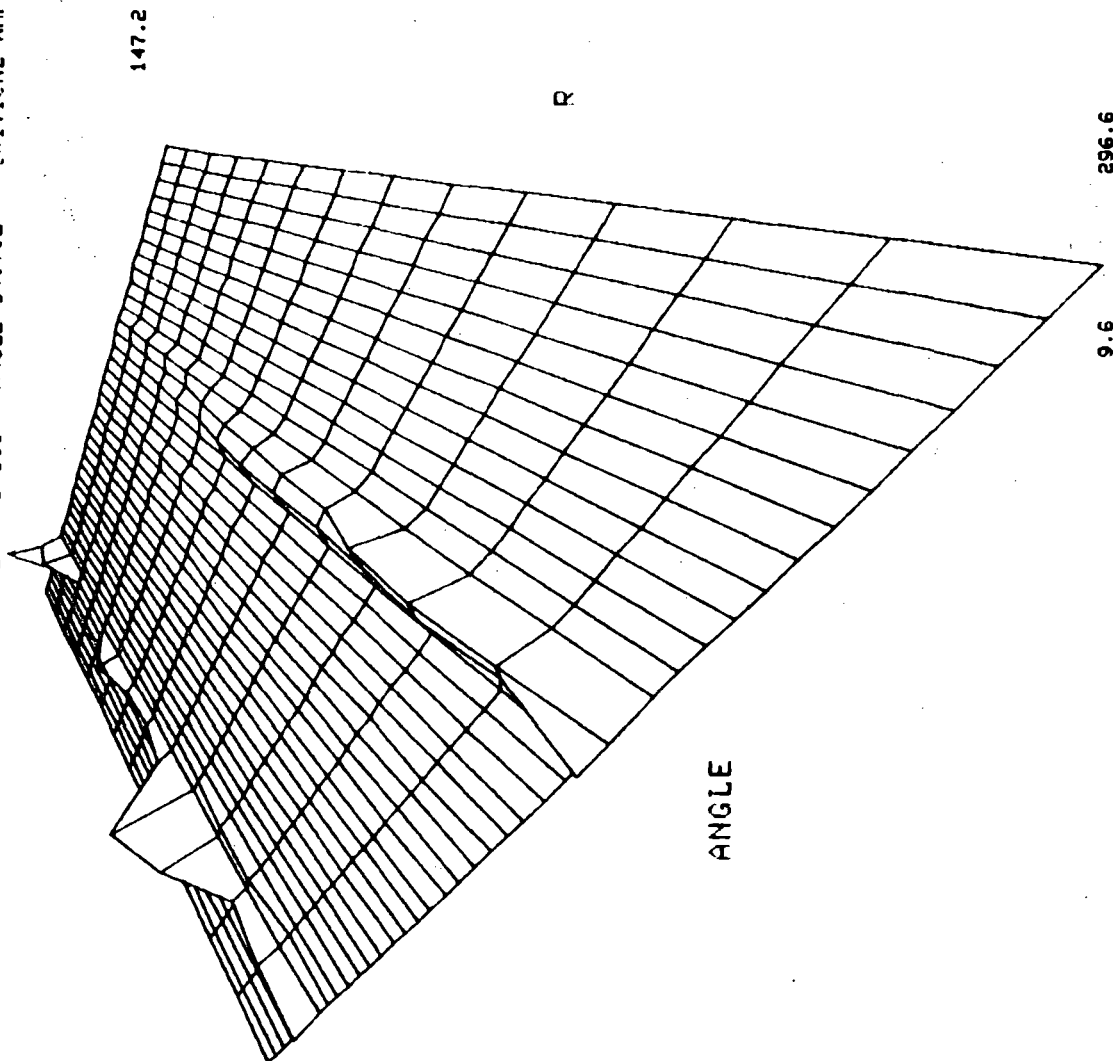
NASH PROJECT DUST DEVIL DAY 226 RUN # 17 TAPE 2 OF 3-23633
SCAN # 25 FRAME # 17060 ANGLE 9.446 TO FRAME # 17631 ANGLE 64.702 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 101.0

AVERAGE I - 2.9

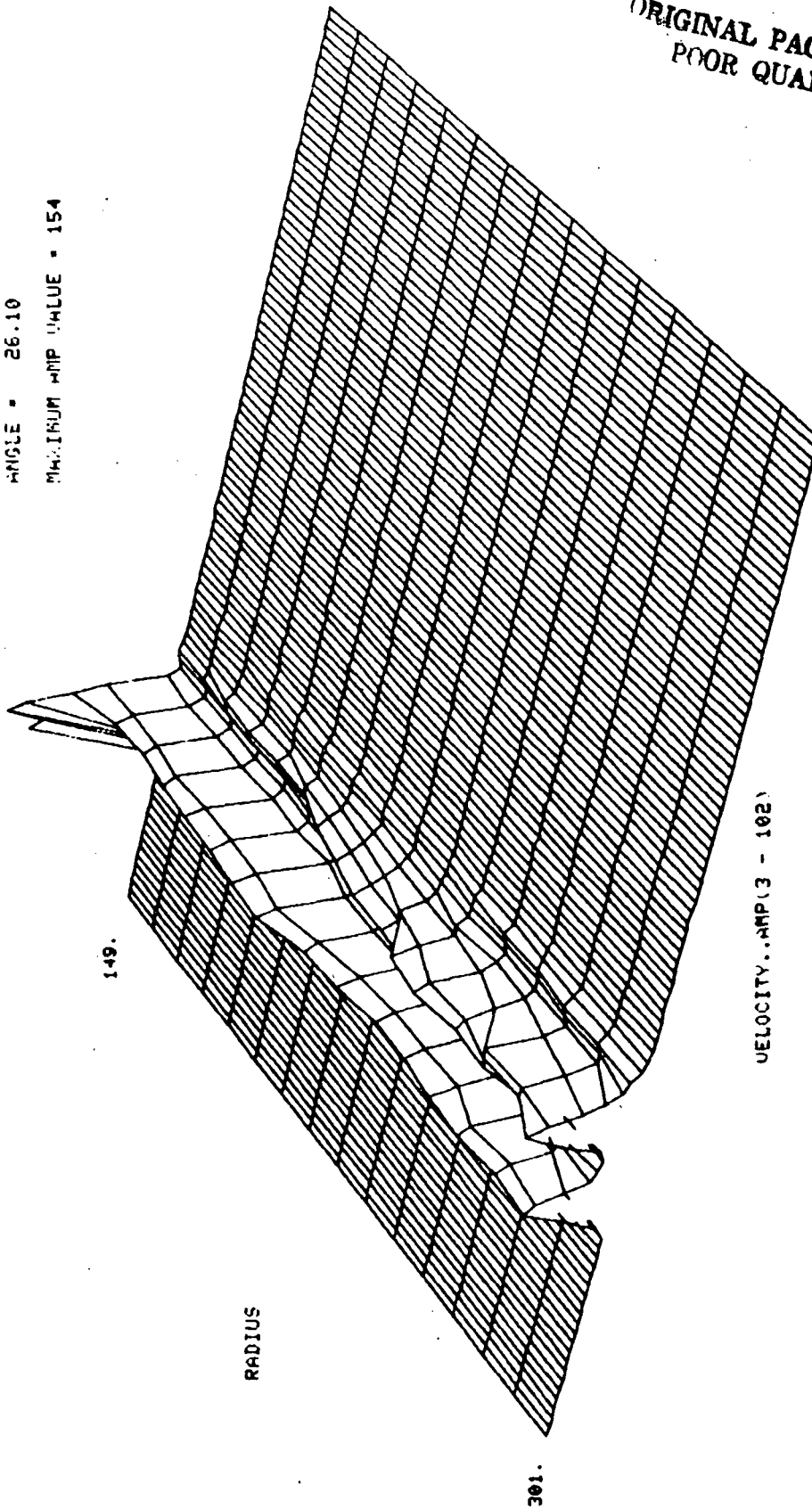
R
1 147.2
2 157.9
3 168.5
4 179.2
5 189.9
6 200.6
7 211.2
8 221.9
9 232.6
10 243.2
11 253.9
12 264.6
13 275.2
14 286.6



ANGLE
1 9.6
2 10.0
3 10.6
4 11.6
5 12.7
6 14.0
7 15.5
8 17.1
9 18.6
10 20.1
11 21.5
12 23.0
13 24.5
14 26.0
15 27.5
16 29.0
17 30.6
18 32.1
19 33.5
20 35.0
21 36.5
22 37.9
23 39.4
24 40.9
25 42.4
26 43.9
27 45.2
28 46.7
29 48.1
30 49.7
31 51.1
32 52.6
33 54.0
34 55.6
35 57.1
36 58.5
37 60.1
38 61.7
39 63.1
40 64.2
41 64.6

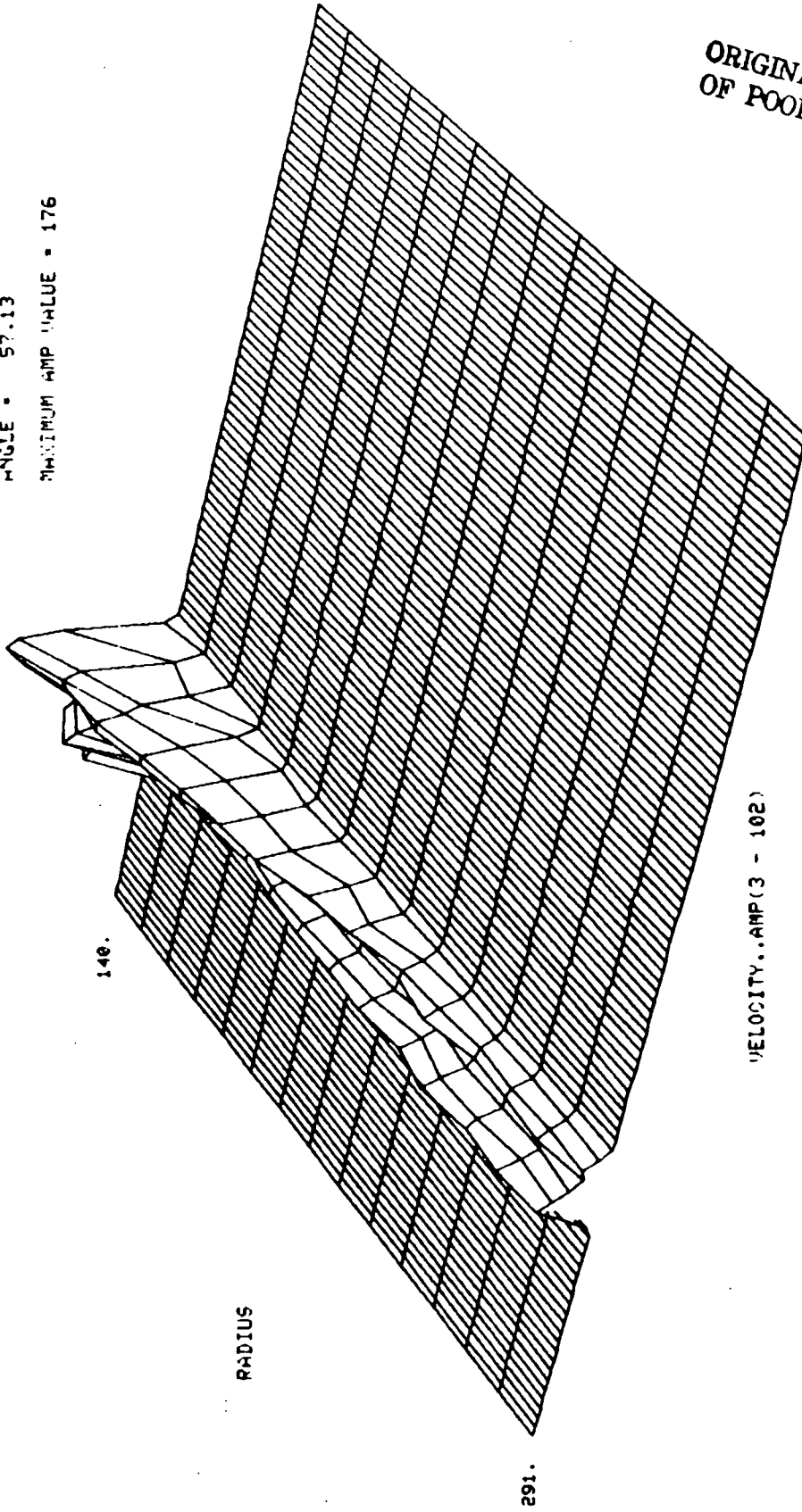
I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28633
 SCAN # 25 FRAME # 17060 ANGLE 9.446 TO FRAME # 17681 ANGLE 64.702 CRITICAL AMP AT CELL 34
 FRAME # 17255 TO 17271
 ANGLE = 26.10
 MAXIMUM AMP VALUE = 154



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NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 2 OF 2-28583
 SCAN # 25 FRAME # 17060 ANGLE 9.445 TO FRAME # 17621 ANGLE 64.702 CRITICAL AMP AT CELL 34
 FRAME # 17584 TO 17599
 ANGLE - 57.13
 MAXIMUM AMP VALUE - 176



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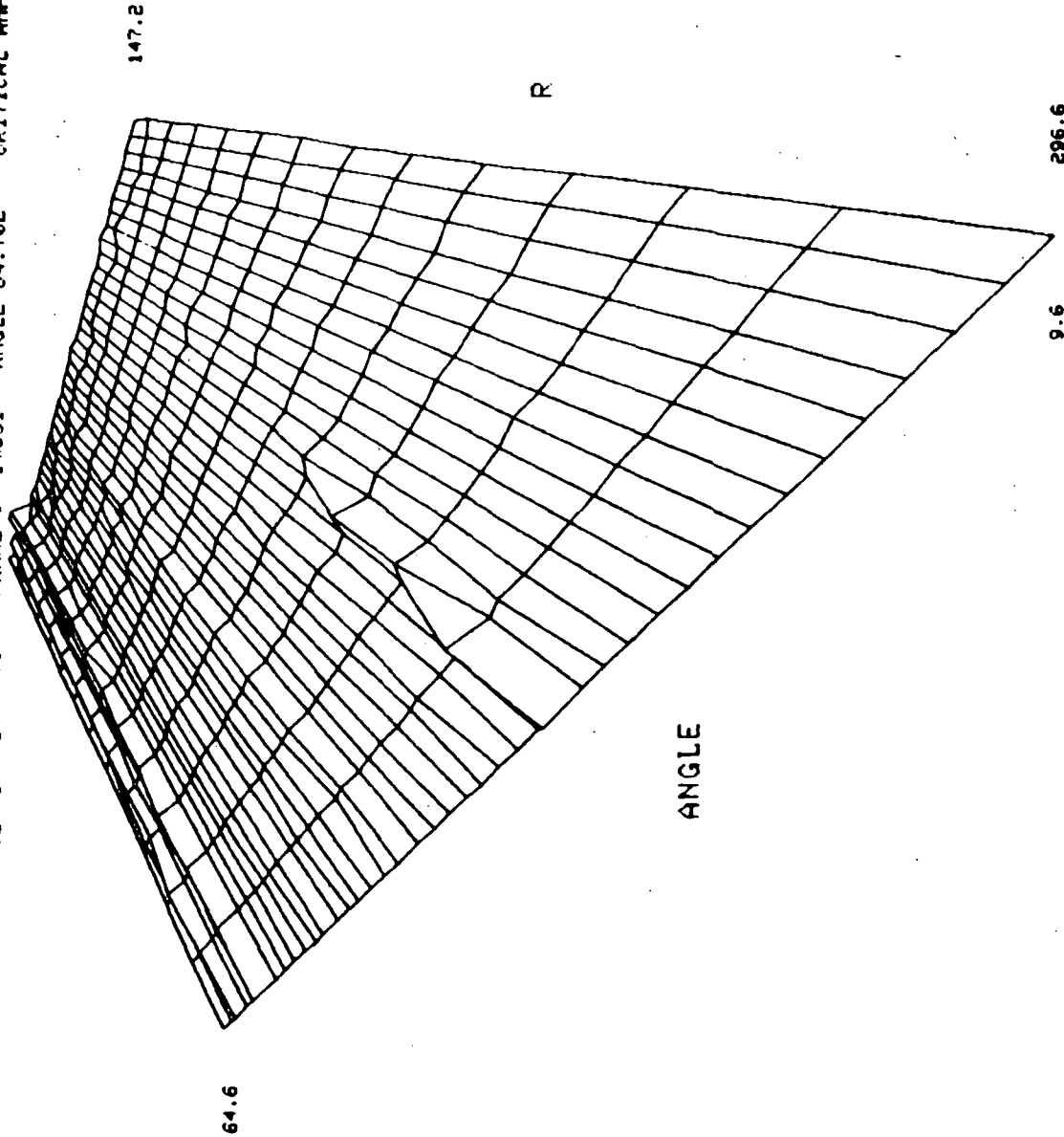
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 25 FRAME # 17060 ANGLE 9.446 TO FRAME # 17681 ANGLE 64.702 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 36.0
 AVERAGE U - 27.3

ANGLE
 1 9.6
 2 10.0
 3 10.6
 4 11.6
 5 12.7
 6 14.0
 7 15.5
 8 17.1
 9 18.6
 10 20.1
 11 21.5
 12 23.0
 13 24.5
 14 26.0
 15 27.5
 16 29.0
 17 30.6
 18 32.1
 19 33.5
 20 35.0
 21 36.5
 22 37.9
 23 39.4
 24 40.9
 25 42.4
 26 43.9
 27 45.2
 28 46.7
 29 48.1
 30 49.7
 31 51.1
 32 52.6
 33 54.0
 34 55.6
 35 57.1
 36 58.5
 37 60.1
 38 61.7
 39 63.1
 40 64.2
 41 64.6

R
 1 147.2
 2 157.9
 3 168.5
 4 179.2
 5 189.9
 6 200.6
 7 211.2
 8 221.9
 9 232.6
 10 243.2
 11 253.9
 12 264.6
 13 275.2
 14 286.6



U, R, A DISPLAY (VELOCITY AT I MAX)

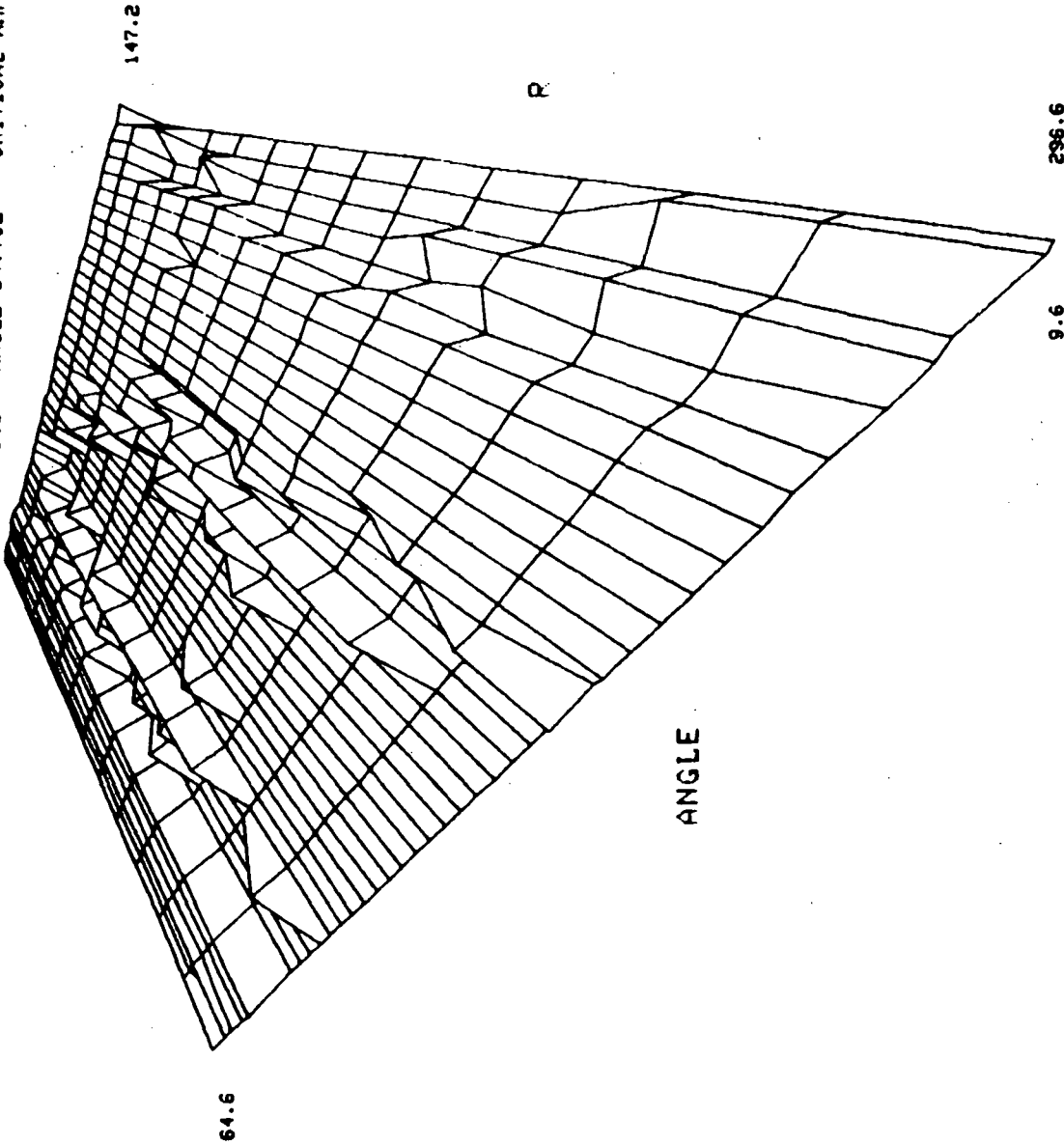
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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
SCAN # 25 FRAME # 17060 ANGLE 9.446 TO FRAME # 17631 ANGLE 64.702 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U - 36.0
AVERAGE U - 16.8

ANGLE	
1	9.6
2	10.0
3	10.6
4	11.6
5	12.7
6	14.0
7	15.5
8	17.1
9	18.6
10	20.1
11	21.5
12	23.0
13	24.5
14	26.0
15	27.5
16	29.0
17	30.6
18	32.1
19	33.5
20	35.0
21	36.5
22	37.9
23	39.4
24	40.9
25	42.4
26	43.9
27	45.2
28	46.7
29	48.1
30	49.7
31	51.1
32	52.6
33	54.0
34	55.6
35	57.1
36	58.5
37	60.1
38	61.7
39	63.1
40	64.2
41	64.6

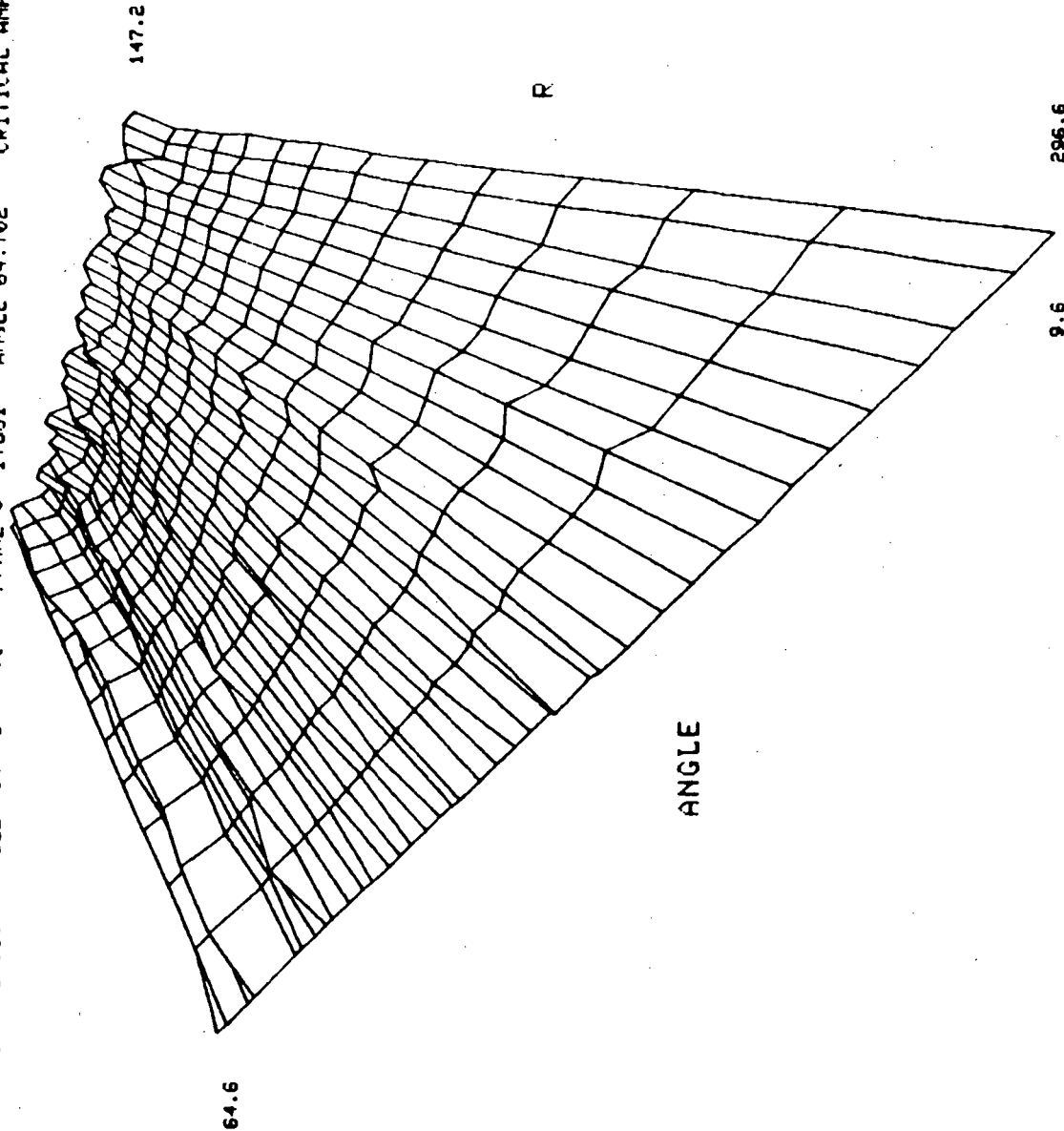


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Umax, R, A DISPLAY AMPLITUDE THRESHOLD AT I - 70

NASA PROJECT DUST DEVIL DAY 238 RUN # 17 TAPE 2 OF 2-23683
 SCAN # 25 FRAME # 17060 ANGLE 9.446 TO FRAME # 17631 ANGLE 64.702 CRITICAL AMP AT CELL 34
 OPTION # 31

R
 1 147.2
 2 157.9
 3 168.5
 4 179.2
 5 189.9
 6 200.6
 7 211.2
 8 221.9
 9 232.6
 10 243.2
 11 253.9
 12 264.6
 13 275.2
 14 286.6



ANGLE
 1 9.6
 2 10.0
 3 10.6
 4 11.6
 5 12.7
 6 14.0
 7 15.5
 8 17.1
 9 18.6
 10 20.1
 11 21.5
 12 23.0
 13 24.5
 14 26.0
 15 27.5
 16 29.0
 17 30.6
 18 32.1
 19 33.5
 20 35.0
 21 36.5
 22 37.9
 23 39.4
 24 40.9
 25 42.4
 26 43.9
 27 45.2
 28 46.7
 29 48.1
 30 49.7
 31 51.1
 32 52.6
 33 54.0
 34 55.6
 35 57.1
 36 58.5
 37 60.1
 38 61.7
 39 63.1
 40 64.2
 41 64.6

U * Imax, R, A DISPLAY

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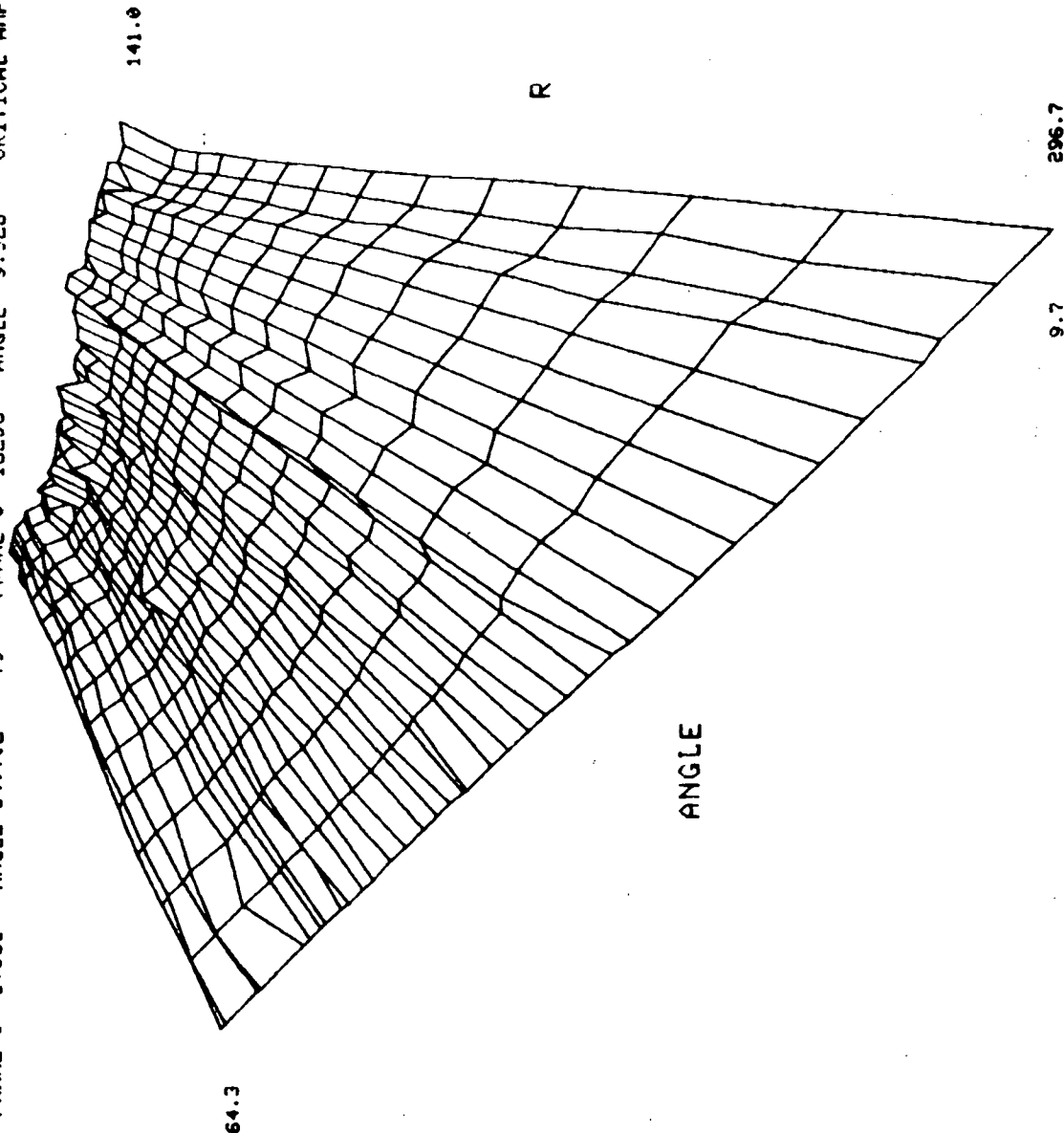
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-23683
 SCAN # 26 FRAME # 17681 ANGLE 64.702 TO FRAME # 16298 ANGLE 9.523 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 172.0

AVERAGE I - 92.9

R
 1 141.0
 2 151.4
 3 161.8
 4 172.2
 5 182.6
 6 192.9
 7 203.3
 8 213.7
 9 224.1
 10 234.5
 11 244.8
 12 255.2
 13 265.6
 14 276.0
 15 286.7



ANGLE
 1 64.3
 2 64.0
 3 63.4
 4 62.3
 5 61.2
 6 59.7
 7 58.3
 8 56.7
 9 55.2
 10 53.7
 11 52.2
 12 50.8
 13 49.3
 14 47.8
 15 46.4
 16 44.9
 17 43.4
 18 42.0
 19 40.5
 20 39.0
 21 37.6
 22 36.1
 23 34.6
 24 33.1
 25 31.6
 26 30.1
 27 28.7
 28 27.2
 29 25.6
 30 24.0
 31 22.5
 32 21.1
 33 19.6
 34 18.0
 35 16.5
 36 14.9
 37 13.5
 38 12.0
 39 10.5
 40 9.7

I_{max}, R, A DISPLAY

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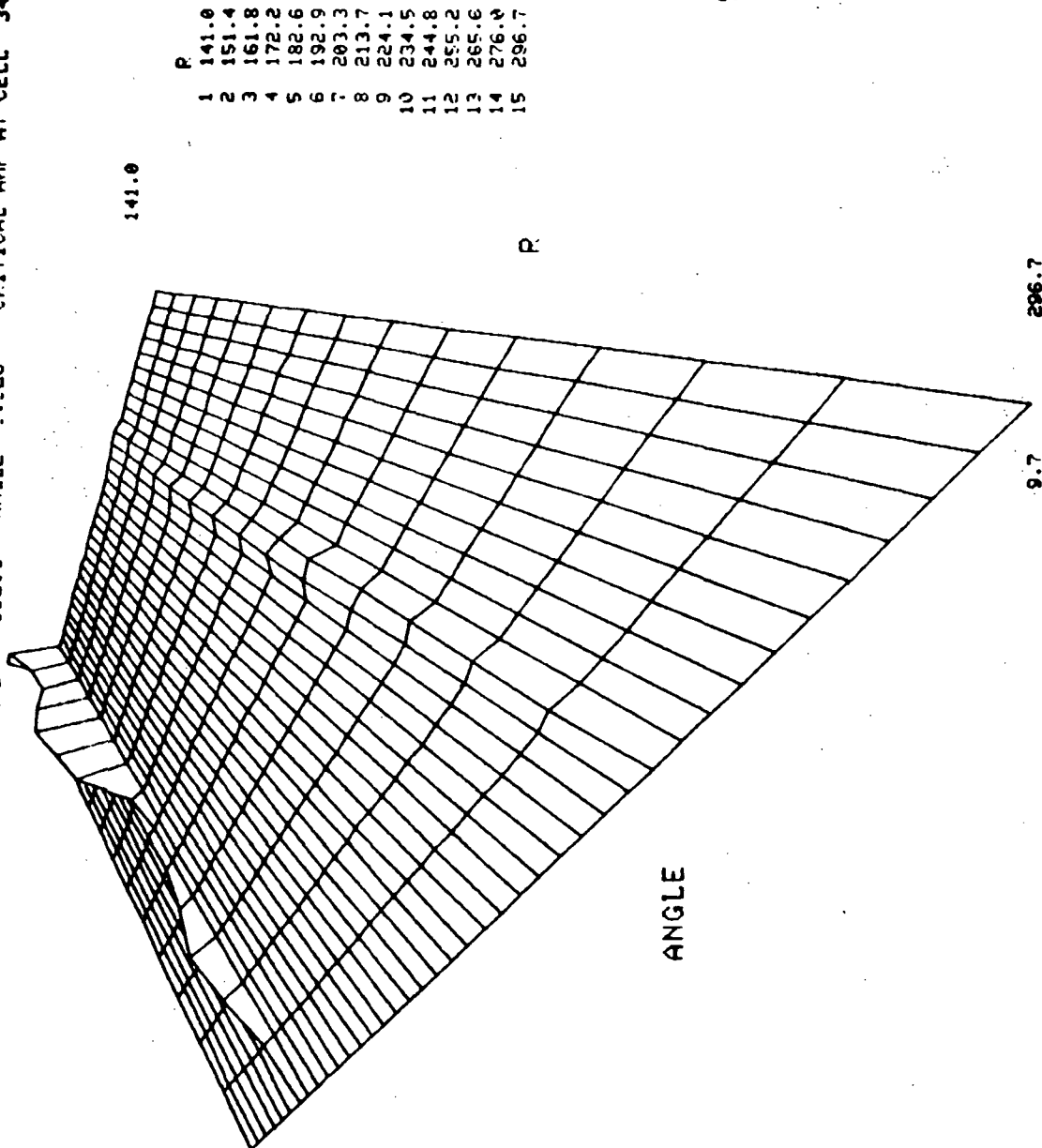
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 26 FRAME # 17681 ANGLE 64.702 TO FRAME # 12293 ANGLE 3.528 OPTICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 128.0

AVERAGE I - 2.9

ANGLE
1 64.3
2 64.0
3 63.4
4 62.3
5 61.2
6 59.7
7 58.3
8 56.7
9 55.2
10 53.7
11 52.2
12 50.8
13 49.3
14 47.8
15 46.4
16 44.9
17 43.4
18 42.0
19 40.5
20 39.0
21 37.6
22 36.1
23 34.6
24 33.1
25 31.6
26 30.1
27 28.7
28 27.2
29 25.6
30 24.0
31 22.5
32 21.1
33 19.6
34 18.0
35 16.5
36 14.9
37 13.5
38 12.0
39 10.5
40 9.7



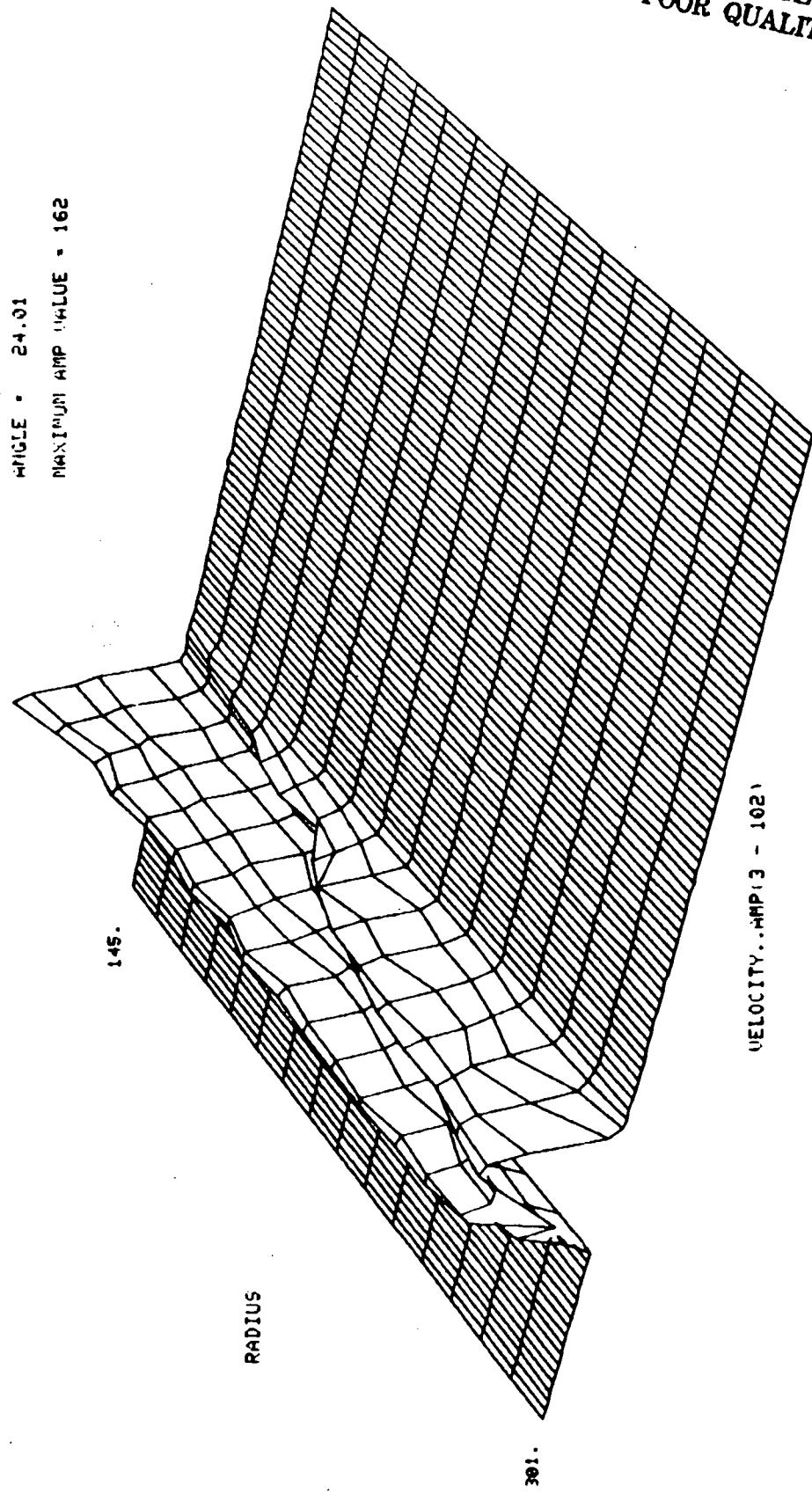
P
1 141.0
2 151.4
3 161.8
4 172.2
5 182.6
6 192.9
7 203.3
8 213.7
9 224.1
10 234.5
11 244.8
12 255.2
13 265.6
14 276.0
15 286.7

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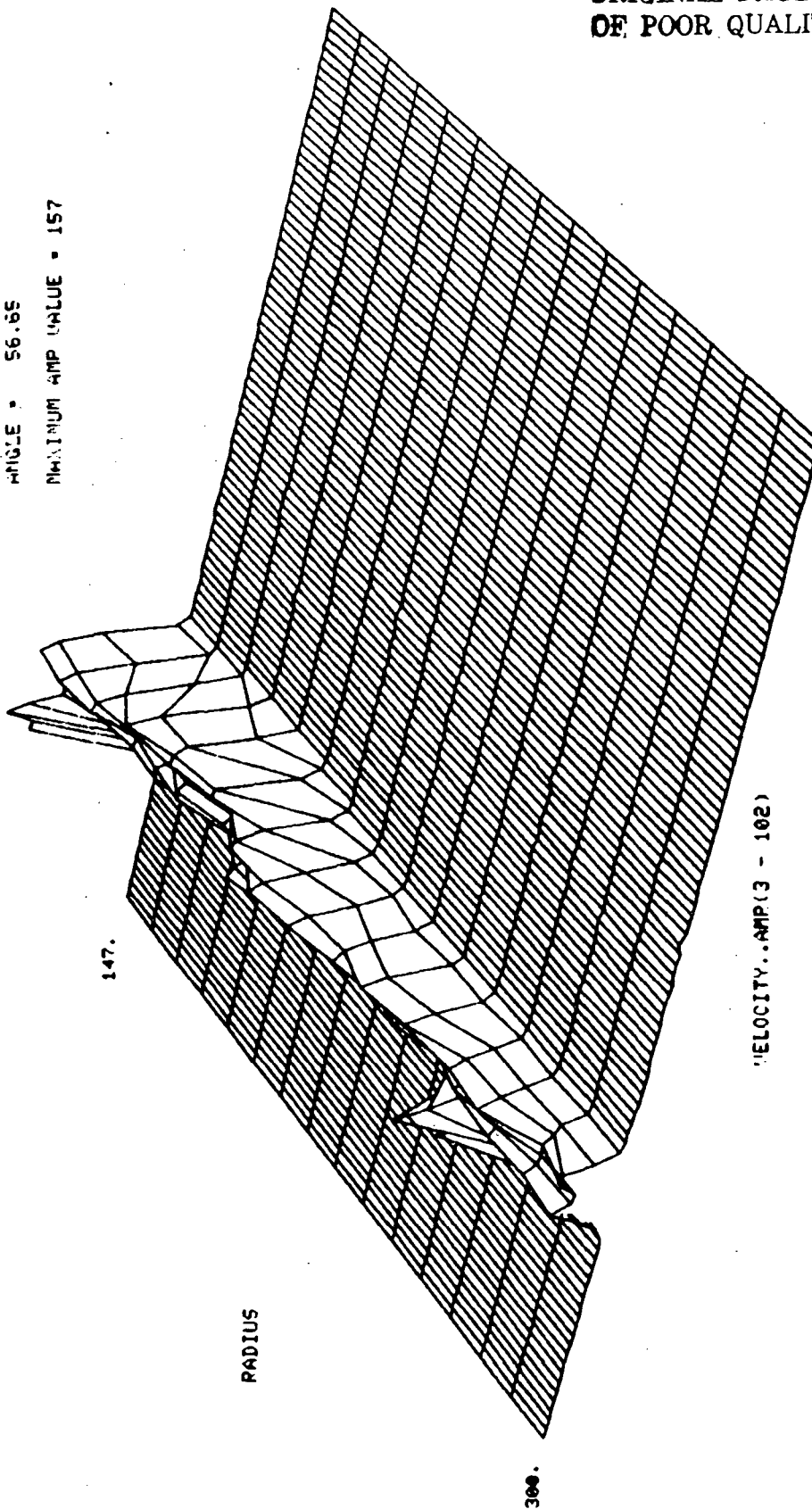
I, R, A DISPLAY AT VELOCITY CELL 34

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-22683
SCAN # 26 FRAME # 17681 ANGLE 64.702 TO FRAME # 12393 ANGLE 9.528 CRITICAL AMP AT CELL 34
FRAME # 13131 TO 18147
ANGLE = 24.01
MAXIMUM AMP VALUE = 162

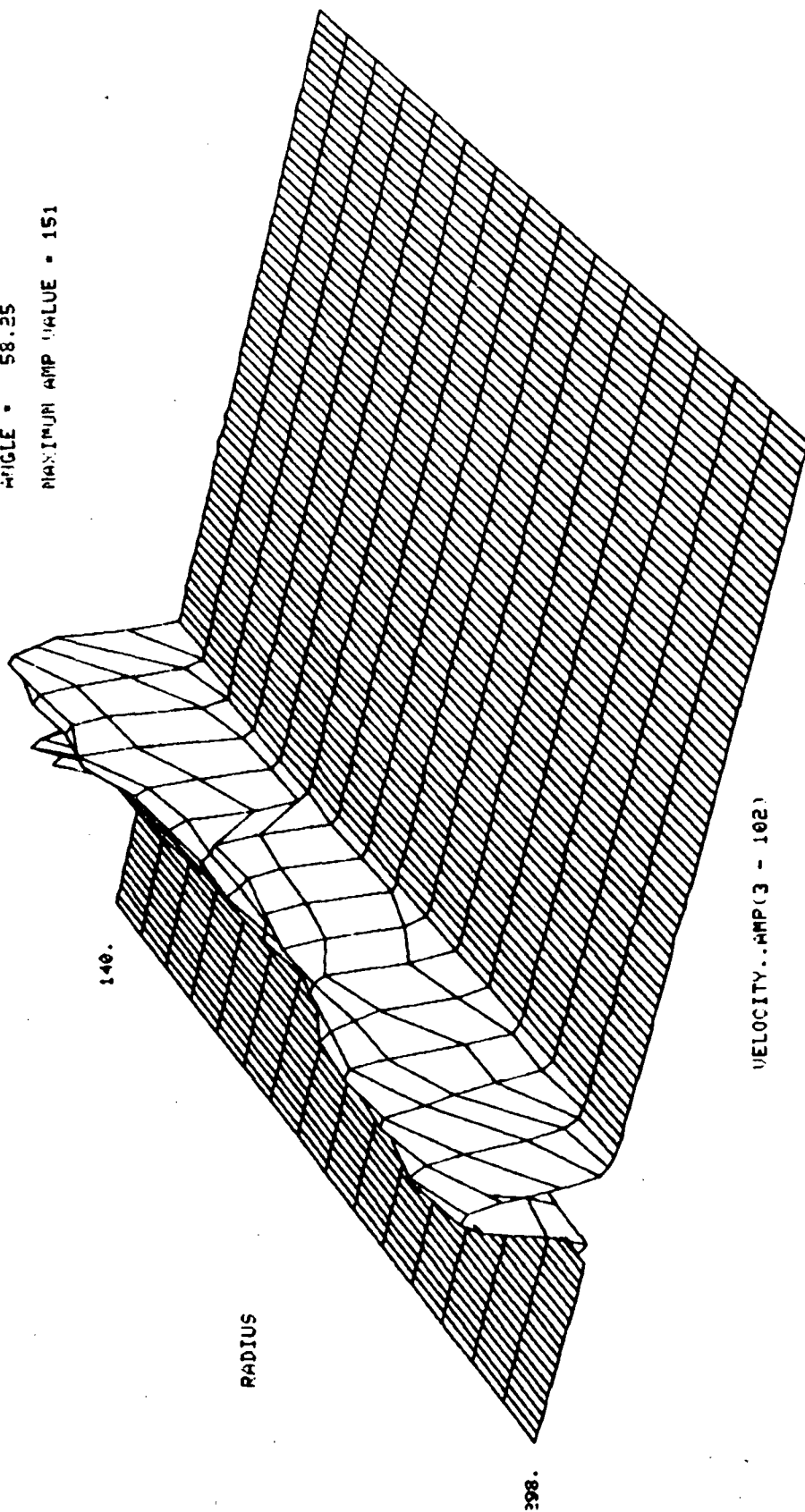


NASA PROJECT DUST DEVIL DAY 236 PUN # 17 TAPE 2 OF 2-236S3
 SCAN # 26 FRAME # 17681 ANGLE 64.702 TO FRAME # 13293 ANGLE 9.528 CRITICAL AMP AT CELL 34
 FRAME # 17787 TO 17803
 ANGLE # 56.65
 MAXIMUM AMP VALUE # 157



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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-22683
SCAN # 26 FRAME # 17681 ANGLE 64.702 TO FRAME # 18295 ANGLE 9.528 CRITICAL AMP AT CELL 34
FRAME # 17771 TO 17787
ANGLE = 58.25
MAXIMUM AMP VALUE = 151



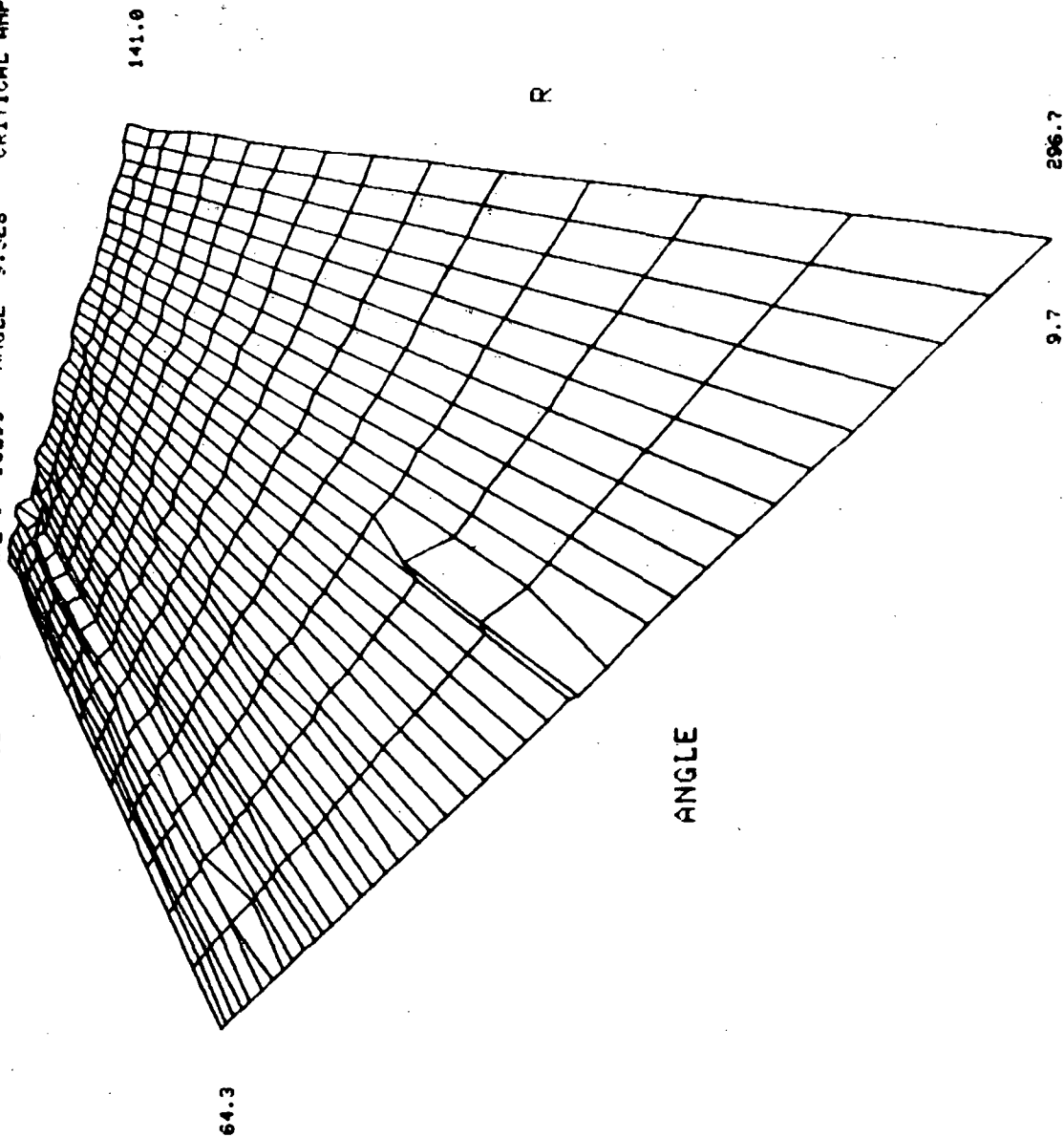
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 26 FRAME # 17681 ANGLE 64.702 TO FRAME # 18293 ANGLE 9.528 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 39.0
 AVERAGE U - 27.1

ANGLE

1	64.3
2	64.0
3	63.4
4	62.3
5	61.2
6	59.7
7	58.3
8	56.7
9	55.2
10	53.7
11	52.2
12	50.8
13	49.3
14	47.8
15	46.4
16	44.9
17	43.4
18	42.0
19	40.5
20	39.0
21	37.6
22	36.1
23	34.6
24	33.1
25	31.6
26	30.1
27	28.7
28	27.2
29	25.6
30	24.0
31	22.5
32	21.1
33	19.6
34	18.0
35	16.5
36	14.9
37	13.5
38	12.0
39	10.5
40	9.7



R

1	141.0
2	151.4
3	161.8
4	172.2
5	182.6
6	192.9
7	203.3
8	213.7
9	224.1
10	234.5
11	244.9
12	255.2
13	265.6
14	276.0
15	286.7

U, R, A DISPLAY (VELOCITY AT I_{max})

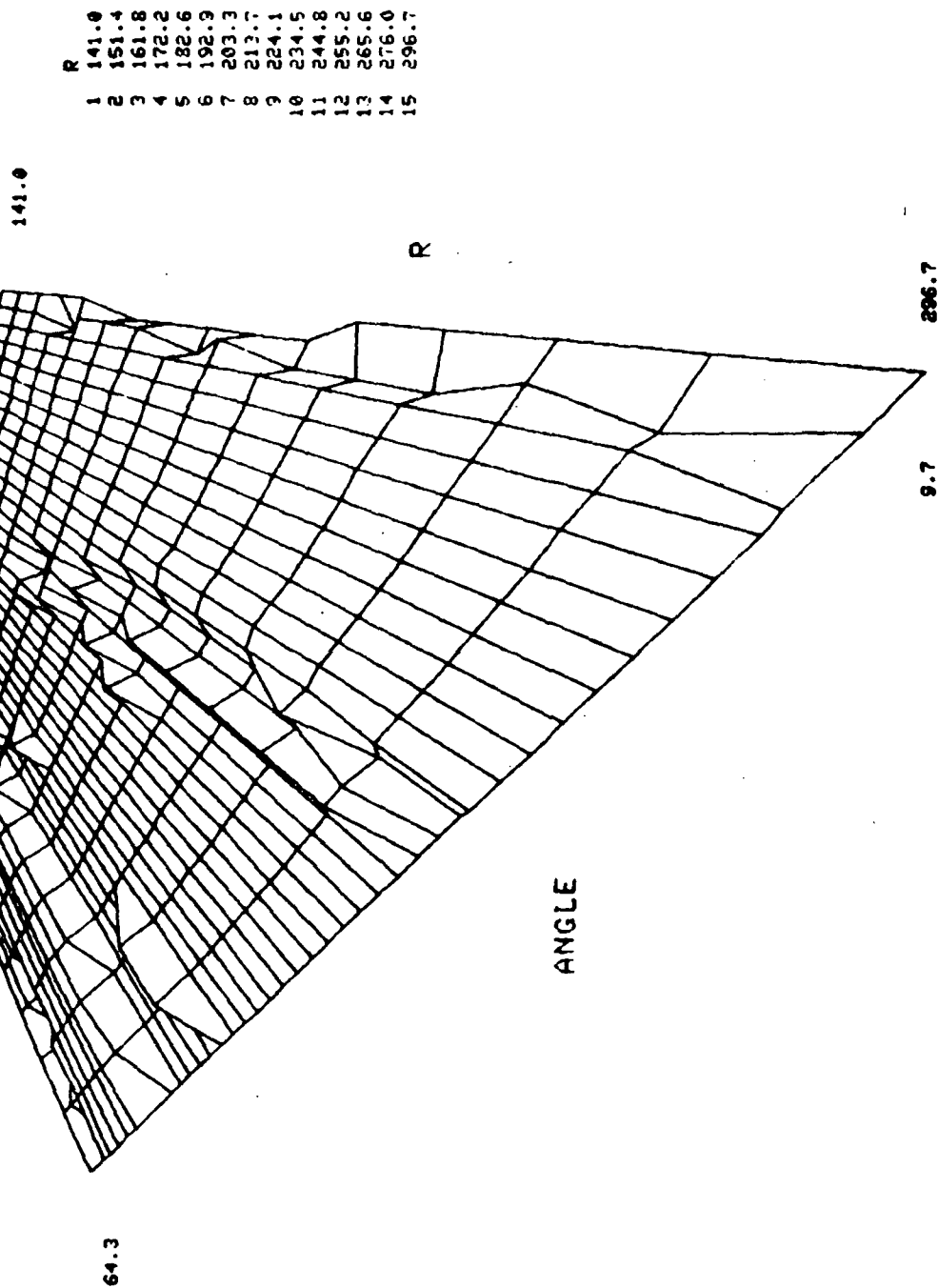
NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 2 OF 2-25683
 SCAN # 26 FRAME # 17681 ANGLE 64.762 TO FRAME # 18298 ANGLE 9.528 CRITICAL AMP AT CELL 34

OPTION # 22

MAXIMUM U = 39.0

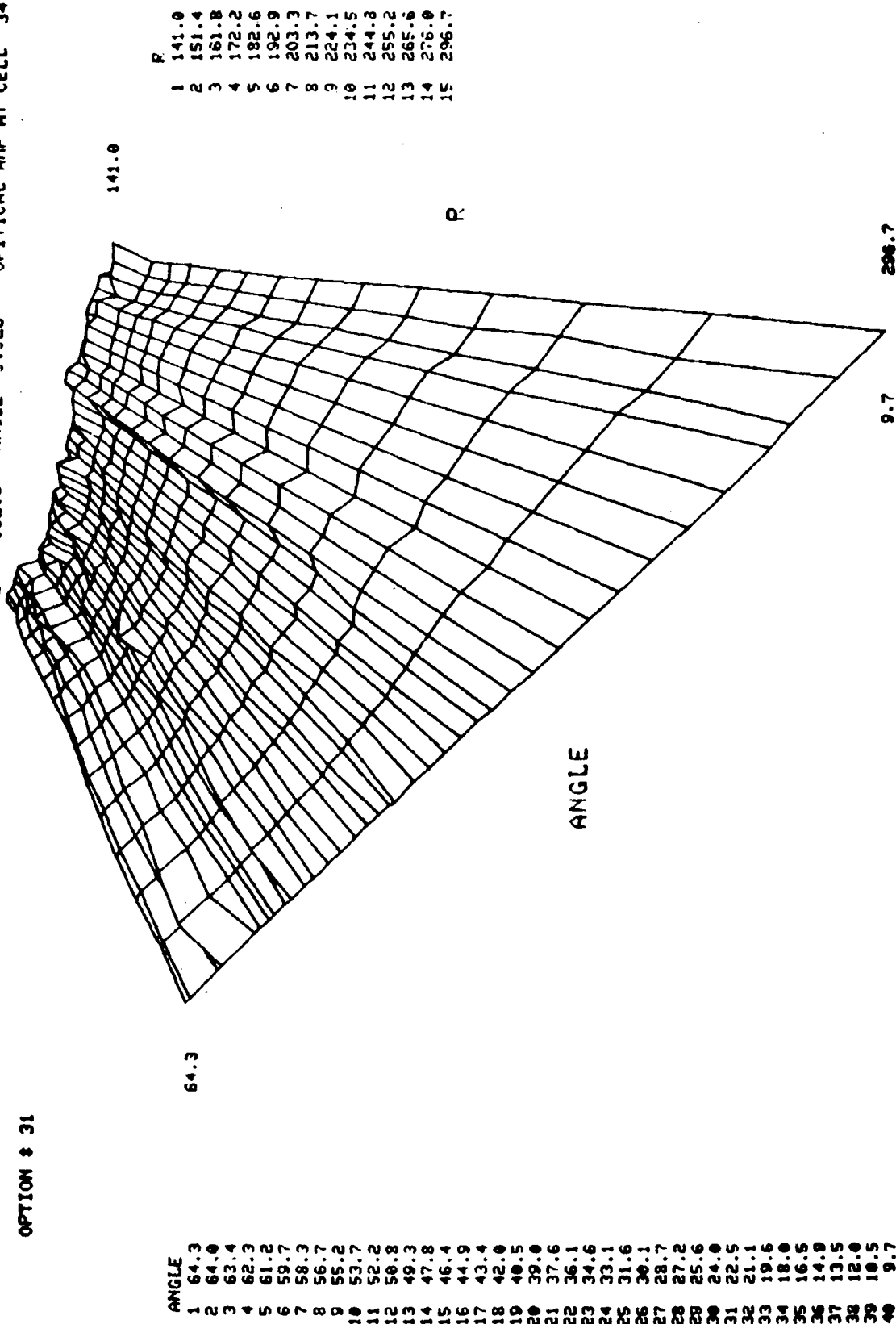
AVERAGE U = 18.6

ANGLE
 1 64.3
 2 64.0
 3 63.4
 4 62.3
 5 61.2
 6 59.7
 7 58.3
 8 56.7
 9 55.2
 10 53.7
 11 52.2
 12 50.8
 13 49.3
 14 47.8
 15 46.4
 16 44.9
 17 43.4
 18 42.0
 19 40.5
 20 39.0
 21 37.6
 22 36.1
 23 34.6
 24 33.1
 25 31.6
 26 30.1
 27 28.7
 28 27.2
 29 25.6
 30 24.0
 31 22.5
 32 21.1
 33 19.6
 34 18.0
 35 16.5
 36 14.9
 37 13.5
 38 12.0
 39 10.5
 40 9.7



Umax, R, A DISPLAY AMPLITUDE THRESHOLD AT 1 = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 26 FRAME # 17681 ANGLE 64.702 TO FRAME # 15293 ANGLE 3.528 OPTICAL AMP AT CELL 34
 OPTION # 31



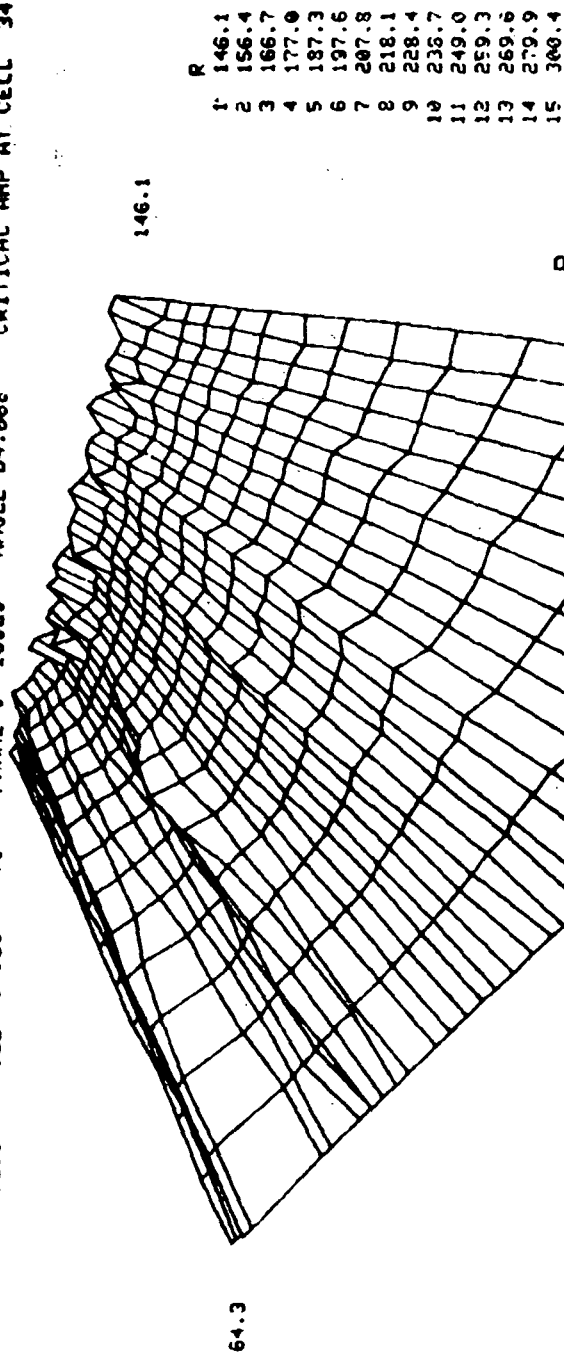
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 27 FRAME # 18298 ANGLE 9.528 TO FRAME # 18299 ANGLE 64.668 CRITICAL AMP AT CELL 34

OPTION # 11

MAXIMUM I - 229.0

AVERAGE I - 93.3

ANGLE
1 9.7
2 9.8
3 10.3
4 11.1
5 12.1
6 13.4
7 14.8
8 16.4
9 17.9
10 19.4
11 20.8
12 22.4
13 23.8
14 25.4
15 26.8
16 28.3
17 29.8
18 31.3
19 32.8
20 34.3
21 35.8
22 37.2
23 38.8
24 40.2
25 41.7
26 43.2
27 44.6
28 46.1
29 47.5
30 48.9
31 50.4
32 52.0
33 53.5
34 54.9
35 56.3
36 57.8
37 59.4
38 60.9
39 62.4
40 63.8
41 64.3



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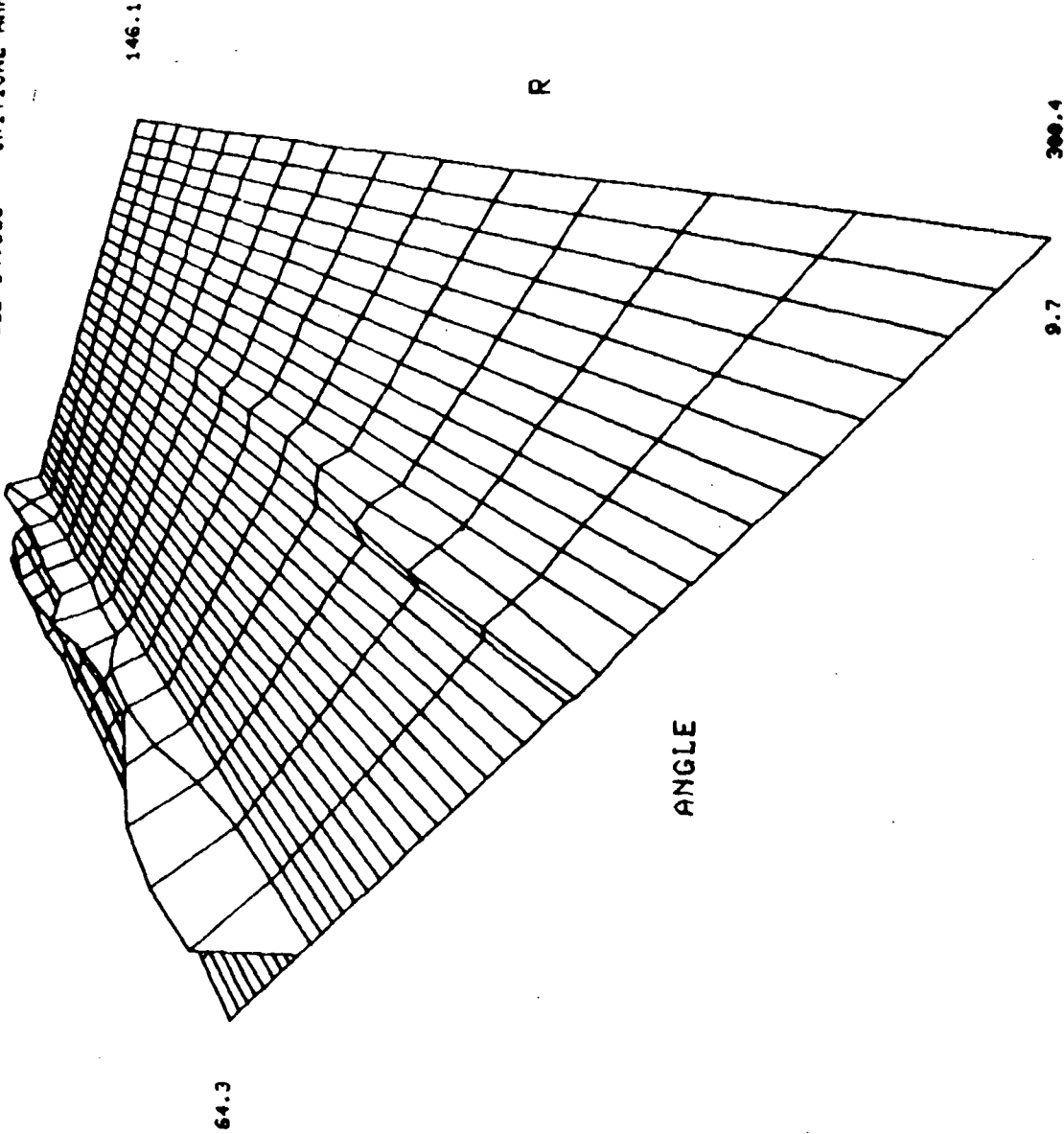
Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
SCAN # 27 FRAME # 18298 ANGLE 9.528 TO FRAME # 18929 ANGLE 64.663 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 212.0
AVERAGE I - 7.3

ANGLE	
1	9.7
2	9.8
3	10.3
4	11.1
5	12.1
6	13.4
7	14.8
8	16.4
9	17.9
10	19.4
11	20.8
12	22.4
13	23.8
14	25.4
15	26.8
16	28.3
17	29.8
18	31.3
19	32.8
20	34.3
21	35.8
22	37.2
23	38.8
24	40.2
25	41.7
26	43.2
27	44.6
28	46.1
29	47.5
30	48.9
31	50.4
32	52.0
33	53.5
34	54.9
35	56.3
36	57.8
37	59.4
38	60.9
39	62.4
40	63.8
41	64.3

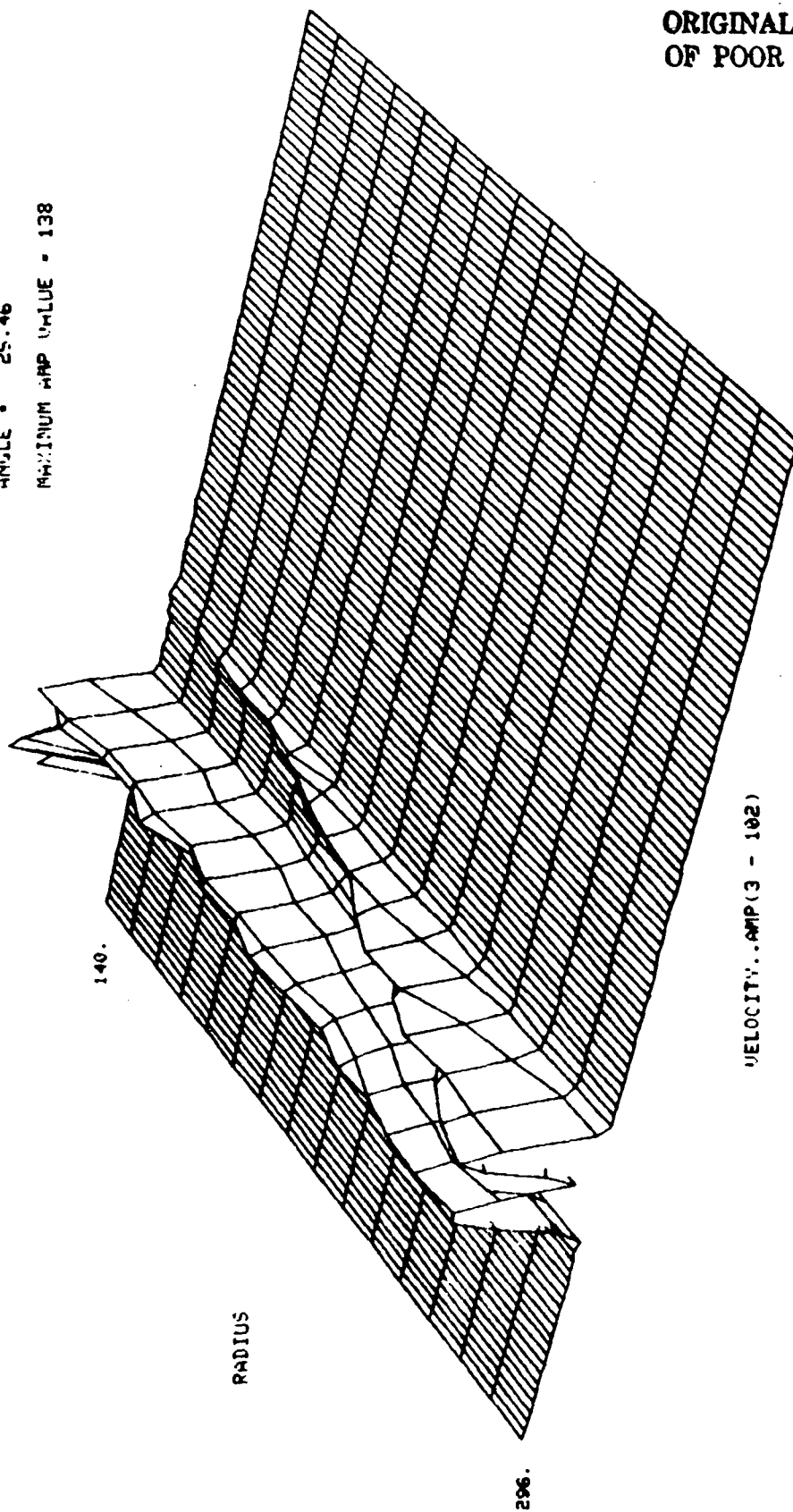


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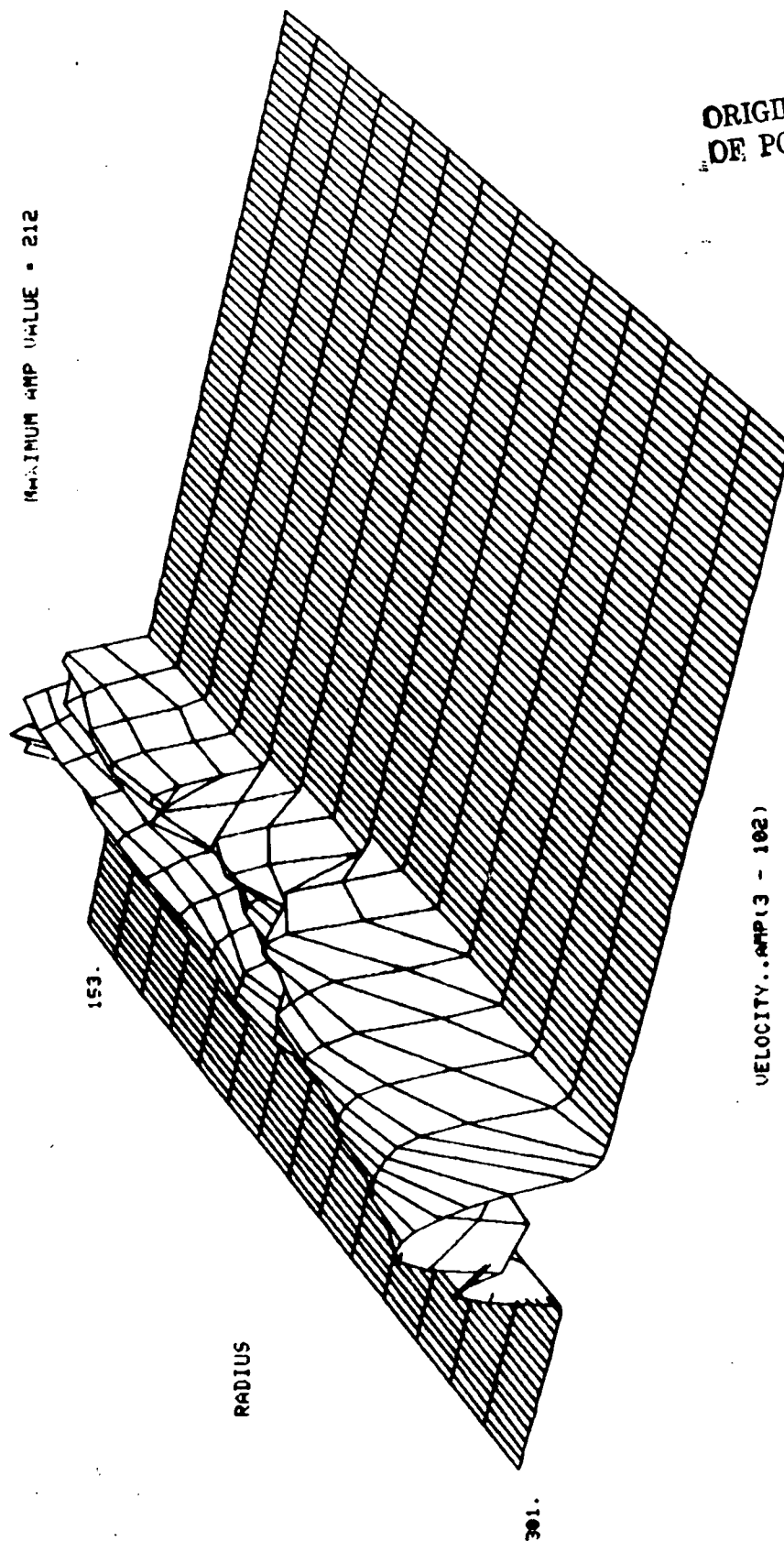
I, R, A DISPLAY AT VELOCITY CELL 34

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
SCAN # 27 FRAME # 18298 ANGLE 9.528 TO FRAME # 18329 ANGLE 64.668 CRITICAL AMP AT CELL 34
FRAME # 18491 TO 18507
ANGLE = 25.46
MAXIMUM AMP VALUE = 138



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-22633
 SCAN # 27 FRAME # 18298 ANGLE 9.528 TO FRAME # 13929 ANGLE 64.668 CRITICAL AMP AT CELL 34
 FRAME # 18789 TO 18804
 ANGLE = 53.55
 MAXIMUM AMP VALUE = 212



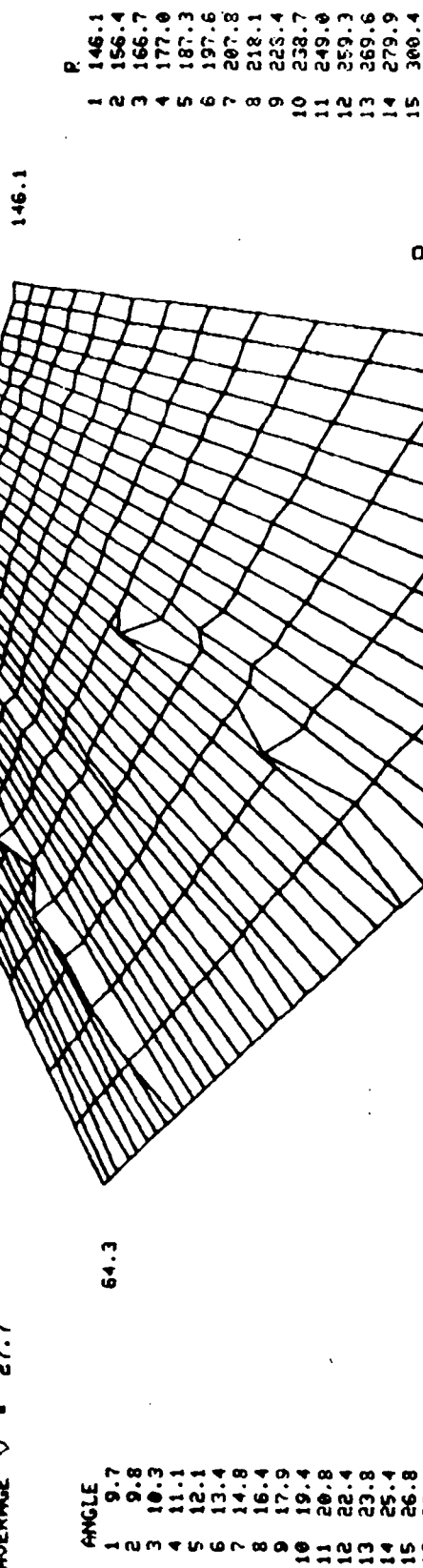
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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 27 FRAME # 18298 ANGLE 9.523 TO FRAME # 18323 ANGLE 64.668 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U = 41.0

AVERAGE U = 27.7

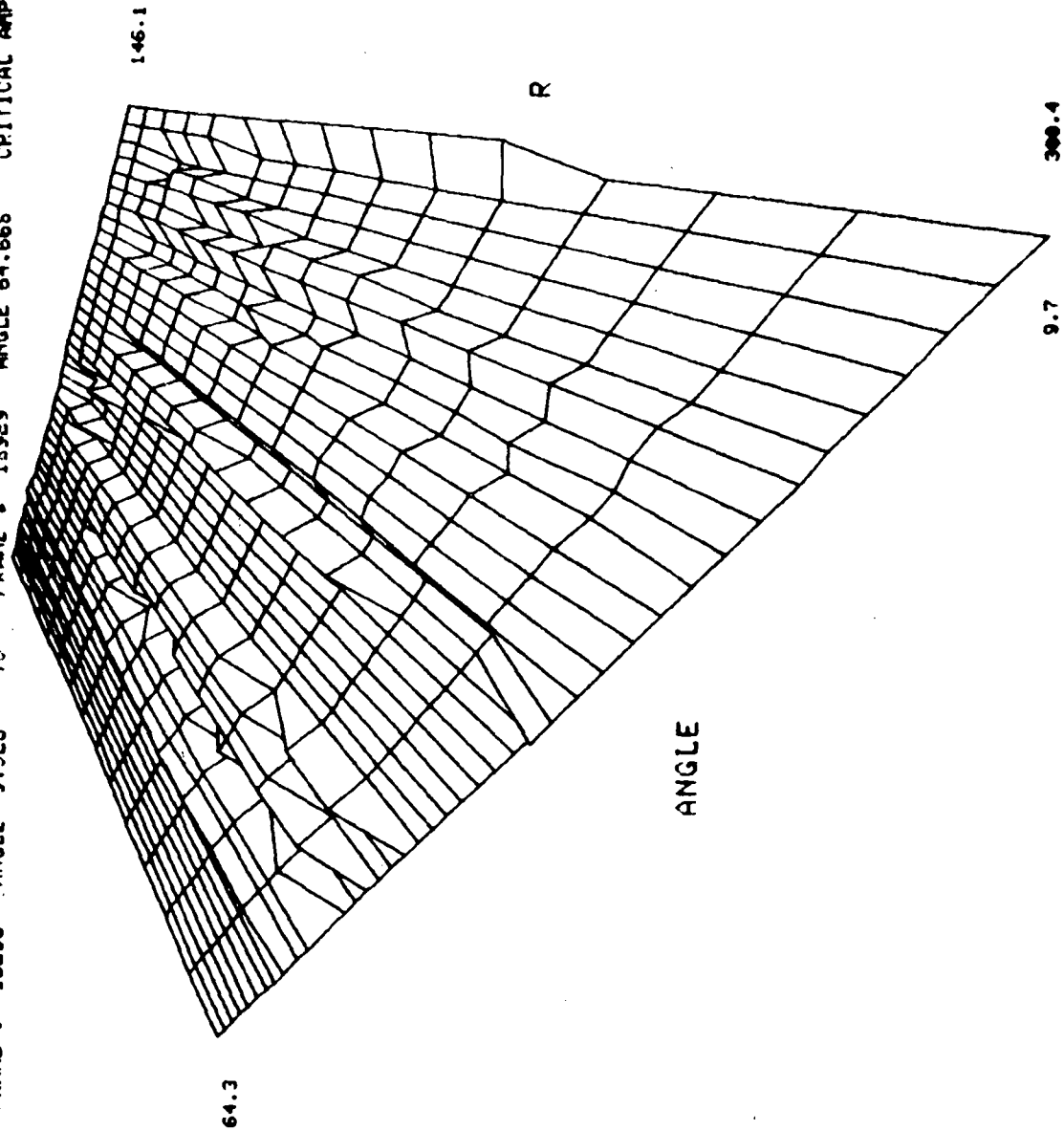


U, R, A DISPLAY (VELOCITY AT I_{max})

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 27 FRAME # 18298 ANGLE 9.528 TO FRAME # 18299 ANGLE 64.668 CRITICAL AMP AT CELL 34
 OPTION # 22

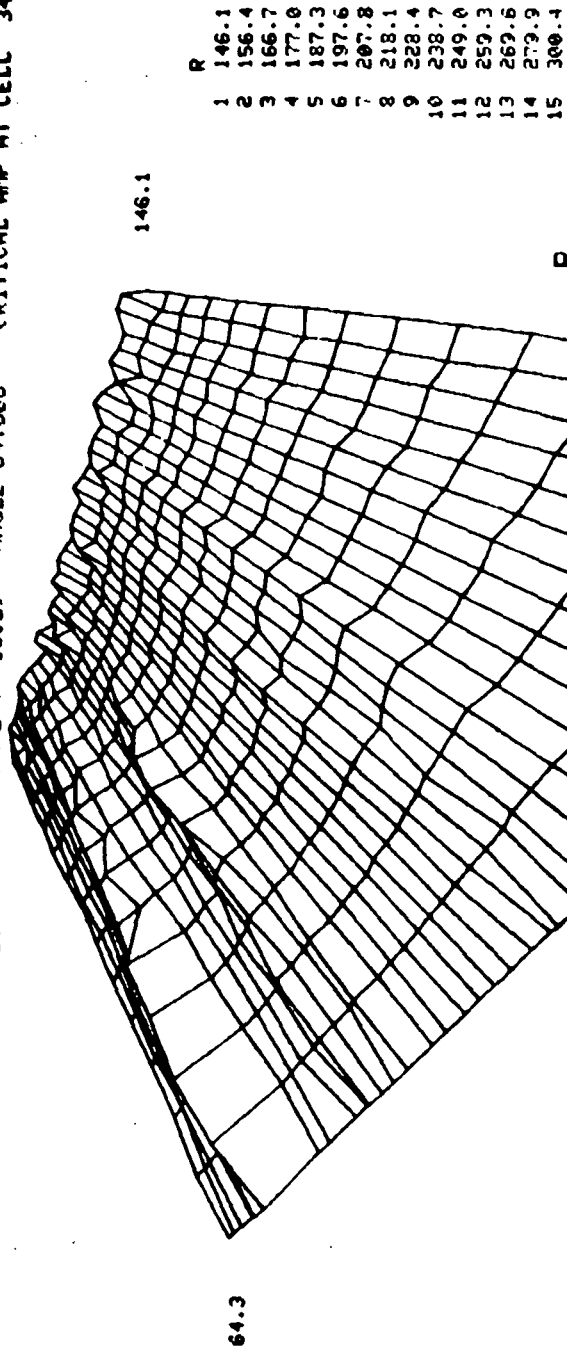
MAXIMUM U = 39.0
 AVERAGE U = 19.7

ANGLE	U
1 9.7	146.1
2 9.8	156.4
3 10.3	166.7
4 11.1	177.0
5 12.1	187.3
6 13.4	197.6
7 14.8	207.8
8 16.4	218.1
9 17.9	228.4
10 19.4	238.7
11 20.8	249.0
12 22.4	259.3
13 23.8	269.6
14 25.4	279.9
15 26.8	300.4
16 28.3	
17 29.8	
18 31.3	
19 32.8	
20 34.3	
21 35.8	
22 37.2	
23 38.8	
24 40.2	
25 41.7	
26 43.2	
27 44.6	
28 46.1	
29 47.5	
30 48.9	
31 50.4	
32 52.0	
33 53.5	
34 54.9	
35 56.3	
36 57.8	
37 59.4	
38 60.9	
39 62.4	
40 63.8	
41 64.3	



Umax, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 27 FRAME # 18298 ANGLE 9.528 TO FRAME # 18929 ANGLE 64.668 CRITICAL AMP AT CELL 34
 OPTION # 31



ANGLE
 1 9.7
 2 9.8
 3 10.3
 4 11.1
 5 12.1
 6 13.4
 7 14.8
 8 16.4
 9 17.9
 10 19.4
 11 20.8
 12 22.4
 13 23.8
 14 25.4
 15 26.8
 16 28.3
 17 29.8
 18 31.3
 19 32.8
 20 34.3
 21 35.8
 22 37.2
 23 38.8
 24 40.2
 25 41.7
 26 43.2
 27 44.6
 28 46.1
 29 47.5
 30 48.9
 31 50.4
 32 52.0
 33 53.5
 34 54.9
 35 56.3
 36 57.8
 37 59.4
 38 60.9
 39 62.4
 40 63.8
 41 64.3

R
 1 146.1
 2 156.4
 3 166.7
 4 177.0
 5 187.3
 6 197.6
 7 207.8
 8 218.1
 9 228.4
 10 238.7
 11 249.0
 12 259.3
 13 269.6
 14 279.9
 15 300.4

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U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-23683
 SCAN # 28 FRAME # 18929 ANGLE 64.663 TO FRAME # 19540 ANGLE 9.148 CRITICAL AMP AT CELL 34

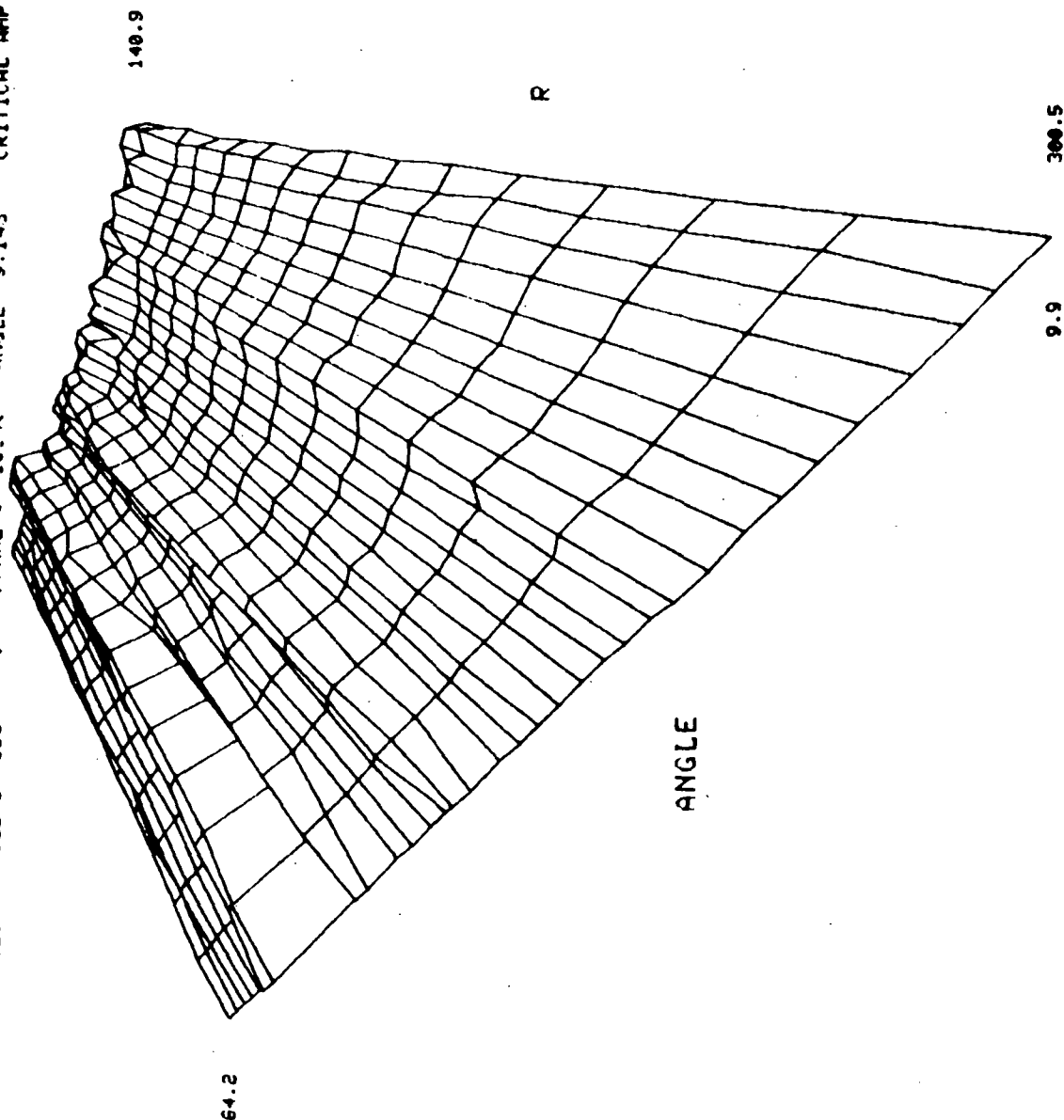
OPTION # 11

MAXIMUM I - 230.0

AVERAGE I - 102.3

ANGLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
	64.2	63.6	62.8	61.7	60.3	58.9	57.5	55.9	54.4	52.9	51.4	49.9	48.5	47.1	45.7	44.1	42.7	41.3	39.7	38.3	36.8	35.2	33.8	32.3	30.7	29.3	27.8	26.2	24.7	23.3	21.8	20.2	18.8	17.2	15.7	14.1	12.7	11.1	9.9

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	140.9	151.5	162.2	172.8	183.4	194.1	204.7	215.4	226.0	236.6	247.3	257.9	268.6	279.2	300.5



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IMAX, R, A DISPLAY

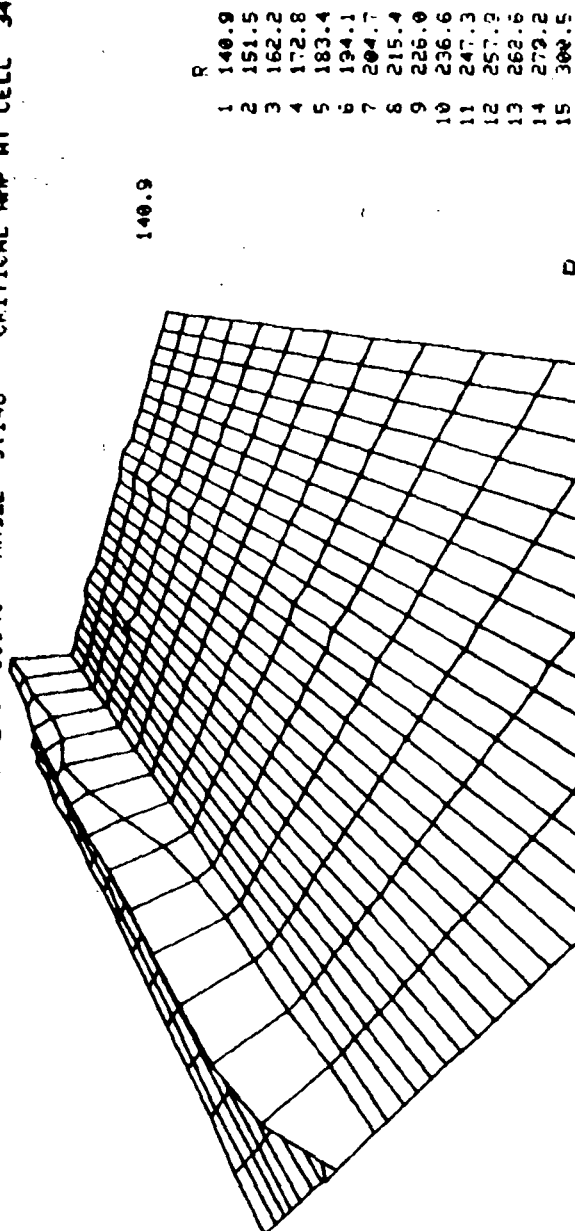
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-286823
 SCAN # 28 FRAME # 18929 ANGLE 64.668 TO FRAME # 19540 ANGLE 9.148 CRITICAL APP WT CELL 34

OPTION # 12

MAXIMUM I - 229.0

AVERAGE I - 12.3

ANGLE
 1 64.2
 2 63.6
 3 62.8
 4 61.7
 5 60.3
 6 58.9
 7 57.5
 8 55.9
 9 54.4
 10 52.9
 11 51.4
 12 49.9
 13 48.5
 14 47.1
 15 45.7
 16 44.1
 17 42.7
 18 41.3
 19 39.7
 20 38.3
 21 36.8
 22 35.2
 23 33.8
 24 32.3
 25 30.7
 26 29.3
 27 27.8
 28 26.2
 29 24.7
 30 23.3
 31 21.8
 32 20.2
 33 18.8
 34 17.2
 35 15.7
 36 14.1
 37 12.7
 38 11.1
 39 9.9

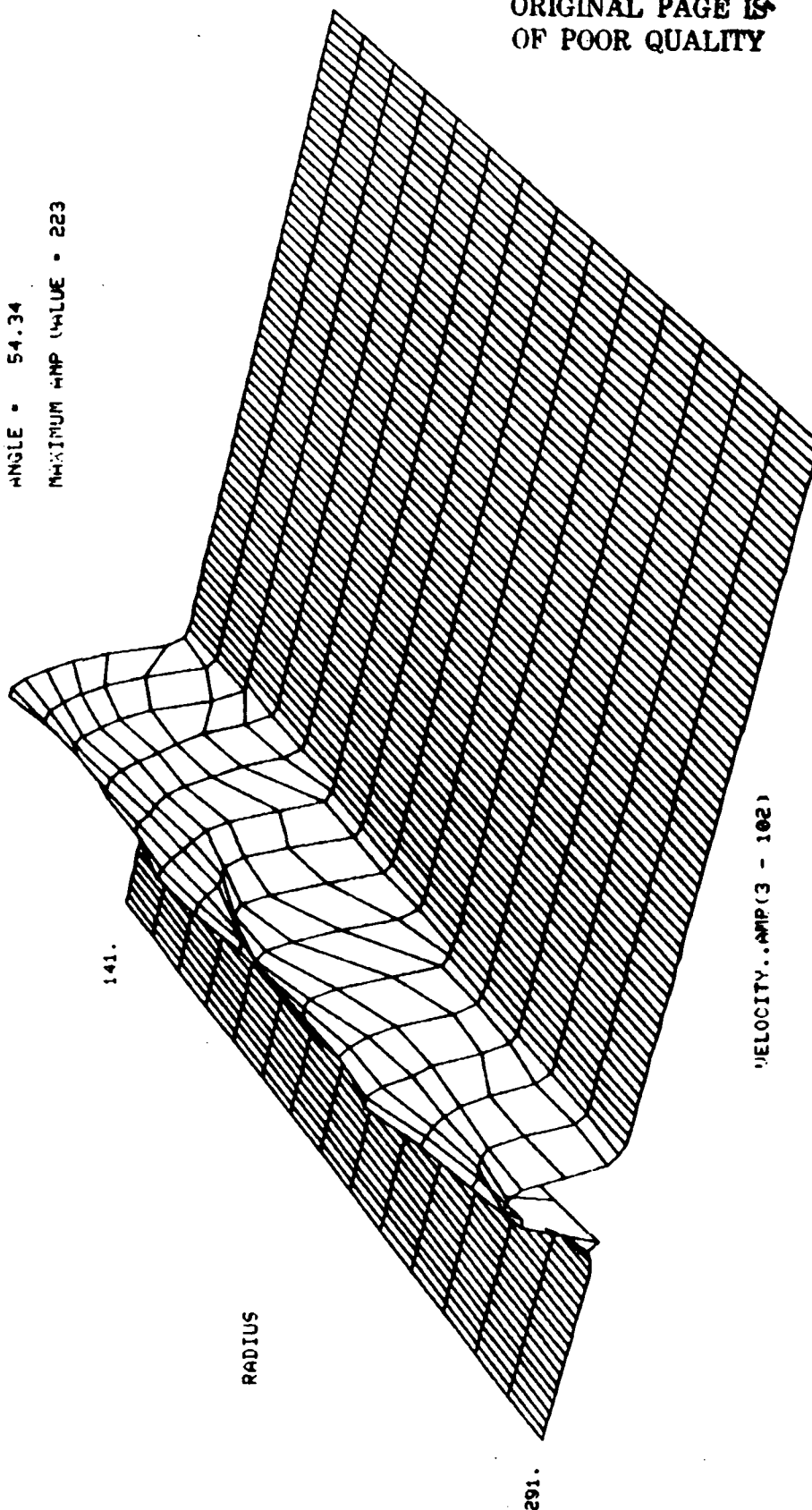


R
 1 140.9
 2 151.5
 3 162.2
 4 172.8
 5 183.4
 6 194.1
 7 204.7
 8 215.4
 9 226.0
 10 236.6
 11 247.3
 12 257.9
 13 268.6
 14 279.2
 15 300.5

I, R, A DISPLAY AT VELOCITY CELL 34

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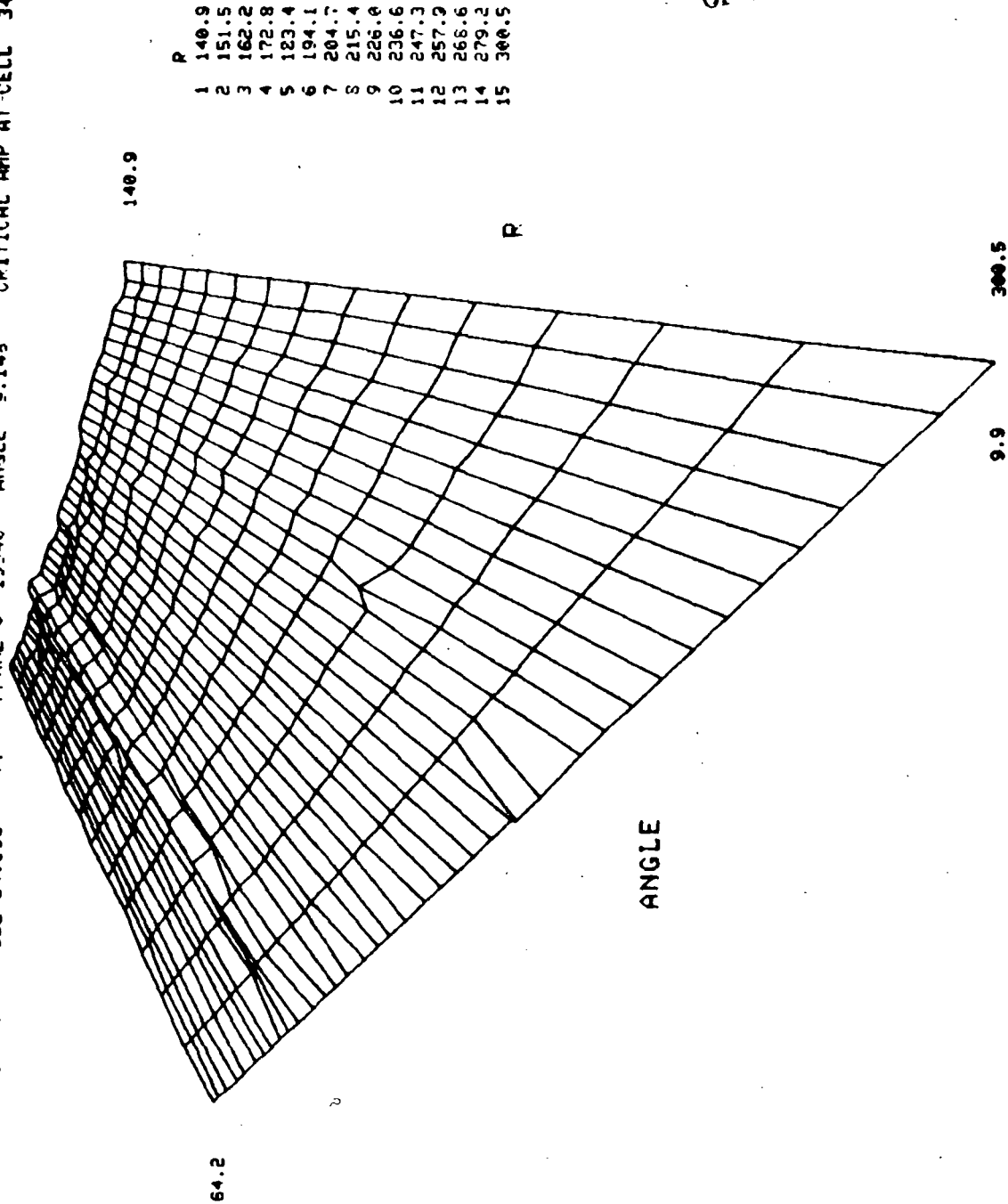
NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 2 OF 2-23583
SCAM # 28 FRAME # 18929 ANGLE 64.668 TO FRAME # 19540 ANGLE 9.148 CRITICAL AMP AT CELL 34
FRAME # 19655 TO 19870
ANGLE = 54.34
MAXIMUM AMP VALUE = 223



NASA PROJECT DUST DEVIL DAY 256 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 28 FRAME # 19929 ANGLE 64.668 TO FRAME # 19540 ANGLE 9.143 CRITICAL AMP AT CELL 34
 OPTION # 21

MAXIMUM U - 41.0
 AVERAGE U - 28.1

ANGLE
 1 64.2
 2 63.6
 3 62.8
 4 61.7
 5 60.3
 6 58.9
 7 57.5
 8 55.9
 9 54.4
 10 52.9
 11 51.4
 12 49.9
 13 48.5
 14 47.1
 15 45.7
 16 44.1
 17 42.7
 18 41.3
 19 39.7
 20 38.3
 21 36.8
 22 35.2
 23 33.8
 24 32.3
 25 30.7
 26 29.3
 27 27.8
 28 26.2
 29 24.7
 30 23.3
 31 21.8
 32 20.2
 33 18.8
 34 17.2
 35 15.7
 36 14.1
 37 12.7
 38 11.1
 39 9.9



R
 1 140.9
 2 151.5
 3 162.2
 4 172.8
 5 183.4
 6 194.1
 7 204.7
 8 215.4
 9 226.0
 10 236.6
 11 247.3
 12 257.9
 13 268.6
 14 279.2
 15 300.5

ORIGINAL PAGE IS
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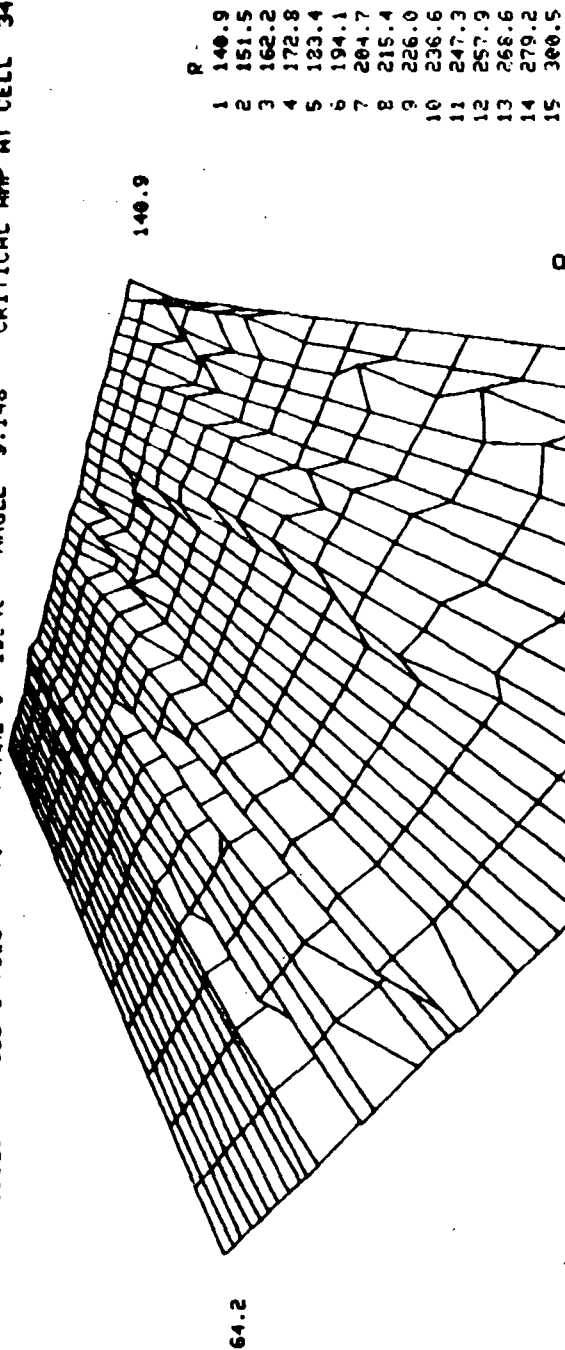
U, R, A DISPLAY (VELOCITY AT IMAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-26883
 SCAN # 28 FRAME # 18929 ANGLE 64.662 TO FRAME # 19540 ANGLE 9.148 CRITICAL AMP AT CELL 34

OPTION # 22

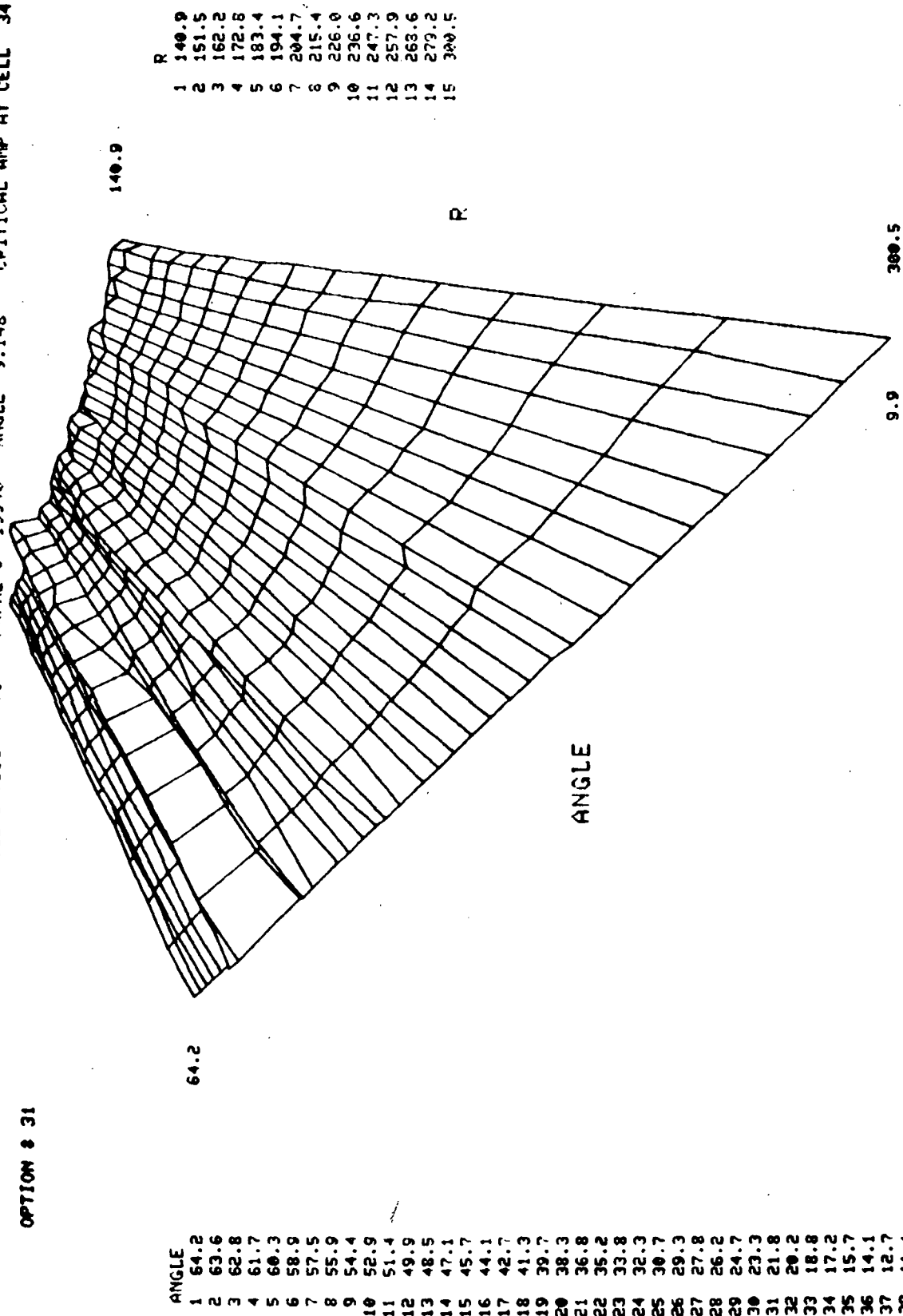
MAXIMUM U = 38.0
 AVERAGE U = 20.5

ANGLE
1 64.2
2 63.6
3 62.8
4 61.7
5 60.3
6 58.9
7 57.5
8 55.9
9 54.4
10 52.9
11 51.4
12 49.9
13 48.5
14 47.1
15 45.7
16 44.1
17 42.7
18 41.3
19 39.7
20 38.3
21 36.8
22 35.2
23 33.8
24 32.3
25 30.7
26 29.3
27 27.8
28 26.2
29 24.7
30 23.3
31 21.8
32 20.2
33 18.8
34 17.2
35 15.7
36 14.1
37 12.7
38 11.1
39 9.9



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT I = 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-23683
 SCAN # 28 FRAME # 18929 ANGLE 64.563 TO FRAME # 19540 ANGLE 9.148 OPTICAL AMP AT CELL 34
 OPTION # 31



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-286823
 SCAN # 29 FRAME # 19540 ANGLE 9.148 TO FRAME # 20158 ANGLE 64.480 CRITICAL AMP AT CELL 34

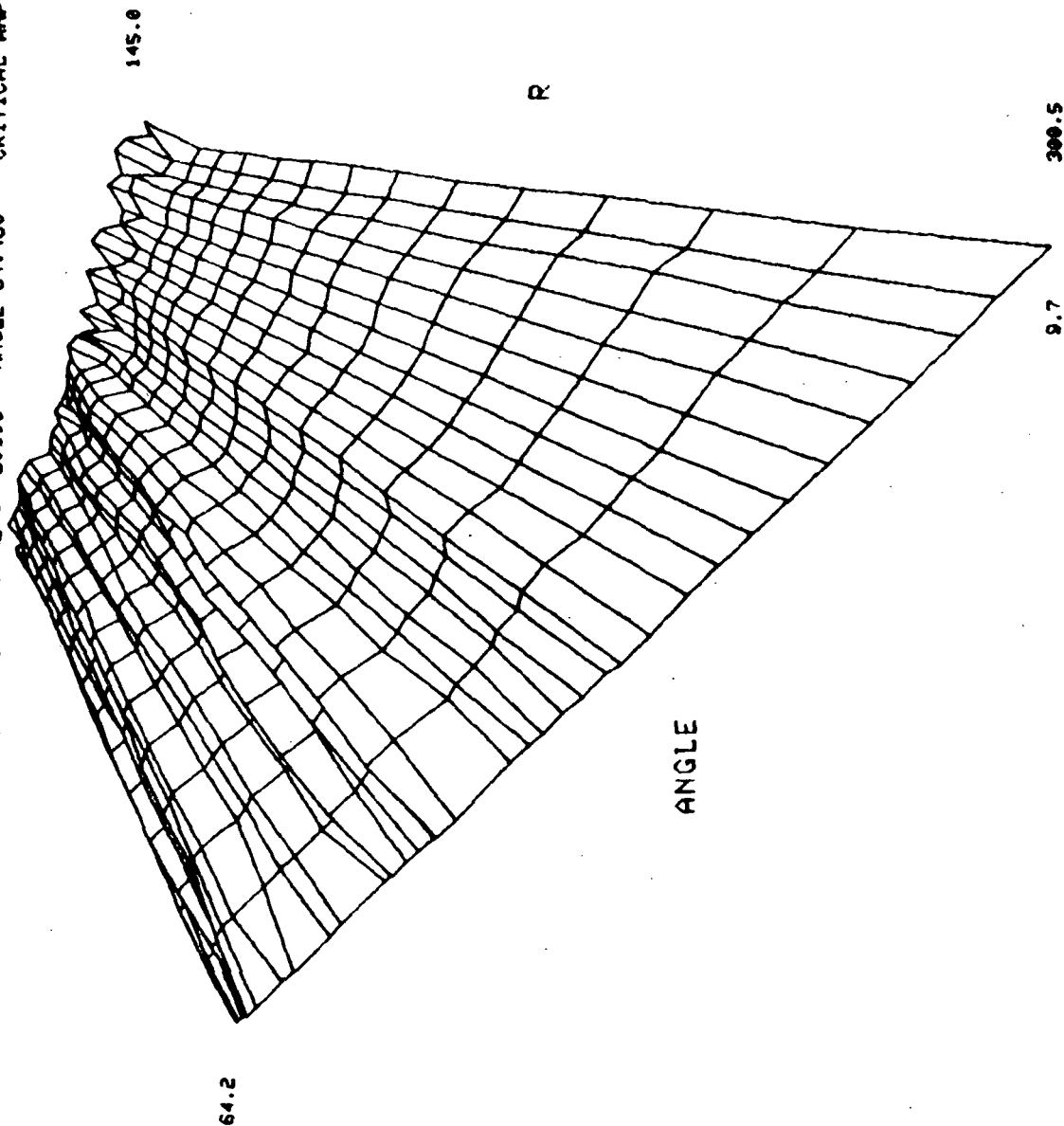
OPTION # 11

MAXIMUM I - 219.0

AVERAGE I - 118.8

ANGLE
 1 9.7
 2 10.0
 3 10.7
 4 11.6
 5 12.9
 6 14.2
 7 15.7
 8 17.2
 9 18.7
 10 20.2
 11 21.7
 12 23.1
 13 24.6
 14 26.1
 15 27.6
 16 29.2
 17 30.7
 18 32.2
 19 33.6
 20 35.1
 21 36.6
 22 38.0
 23 39.6
 24 41.1
 25 42.5
 26 43.9
 27 45.4
 28 46.8
 29 48.4
 30 49.8
 31 51.2
 32 52.7
 33 54.1
 34 55.7
 35 57.1
 36 58.6
 37 60.1
 38 61.7
 39 63.2
 40 64.2

P
 1 145.0
 2 155.4
 3 165.7
 4 176.1
 5 186.5
 6 196.9
 7 207.2
 8 217.6
 9 228.0
 10 238.3
 11 248.7
 12 259.1
 13 269.4
 14 279.8
 15 300.5



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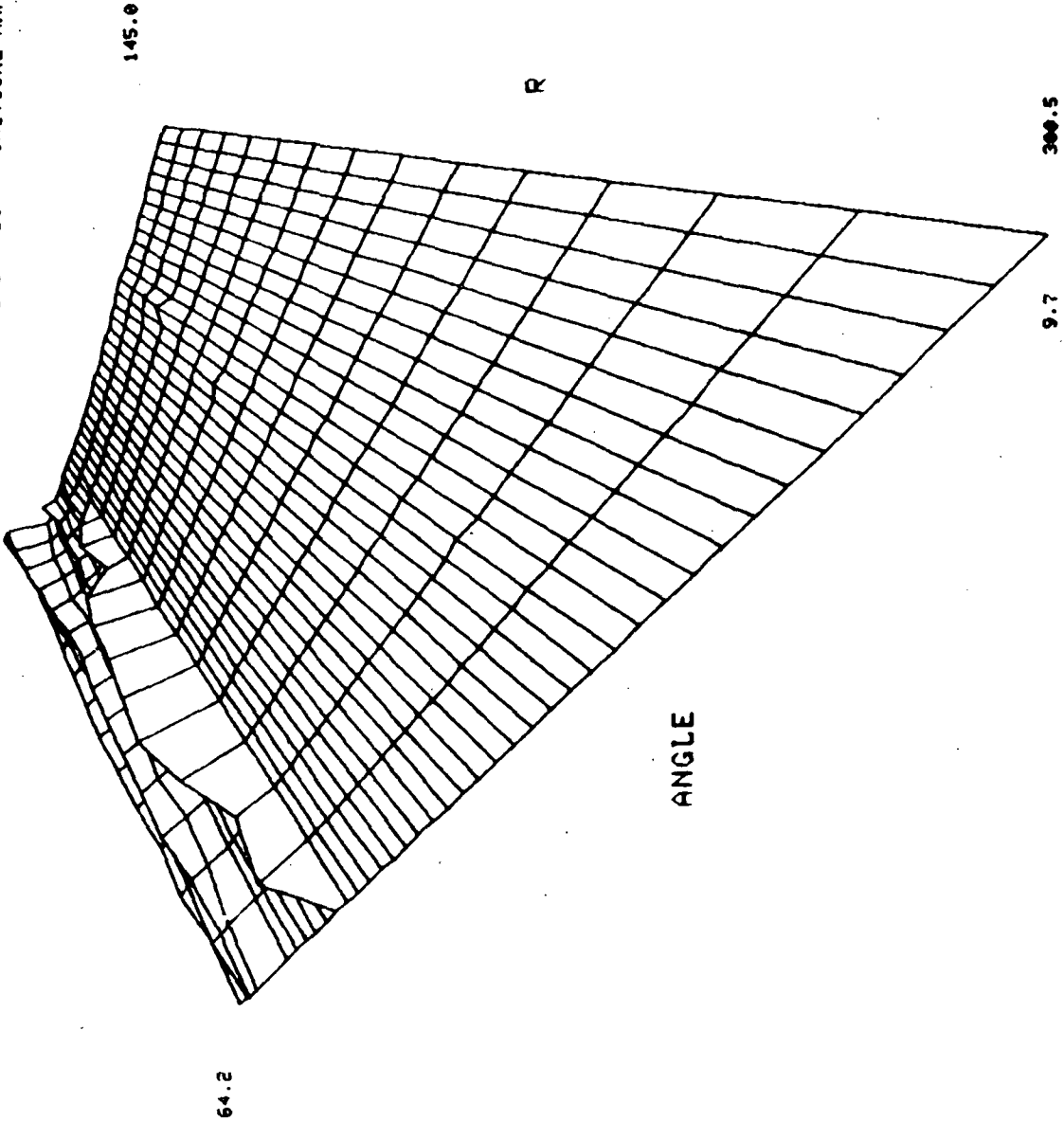
I_{max}, R, A DISPLAY

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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
SCAN # 29 FRAME # 19540 ANGLE 9.148 TO FRAME # 20158 ANGLE 64.480 CRITICAL AMP AT CELL 34
OPTION # 12

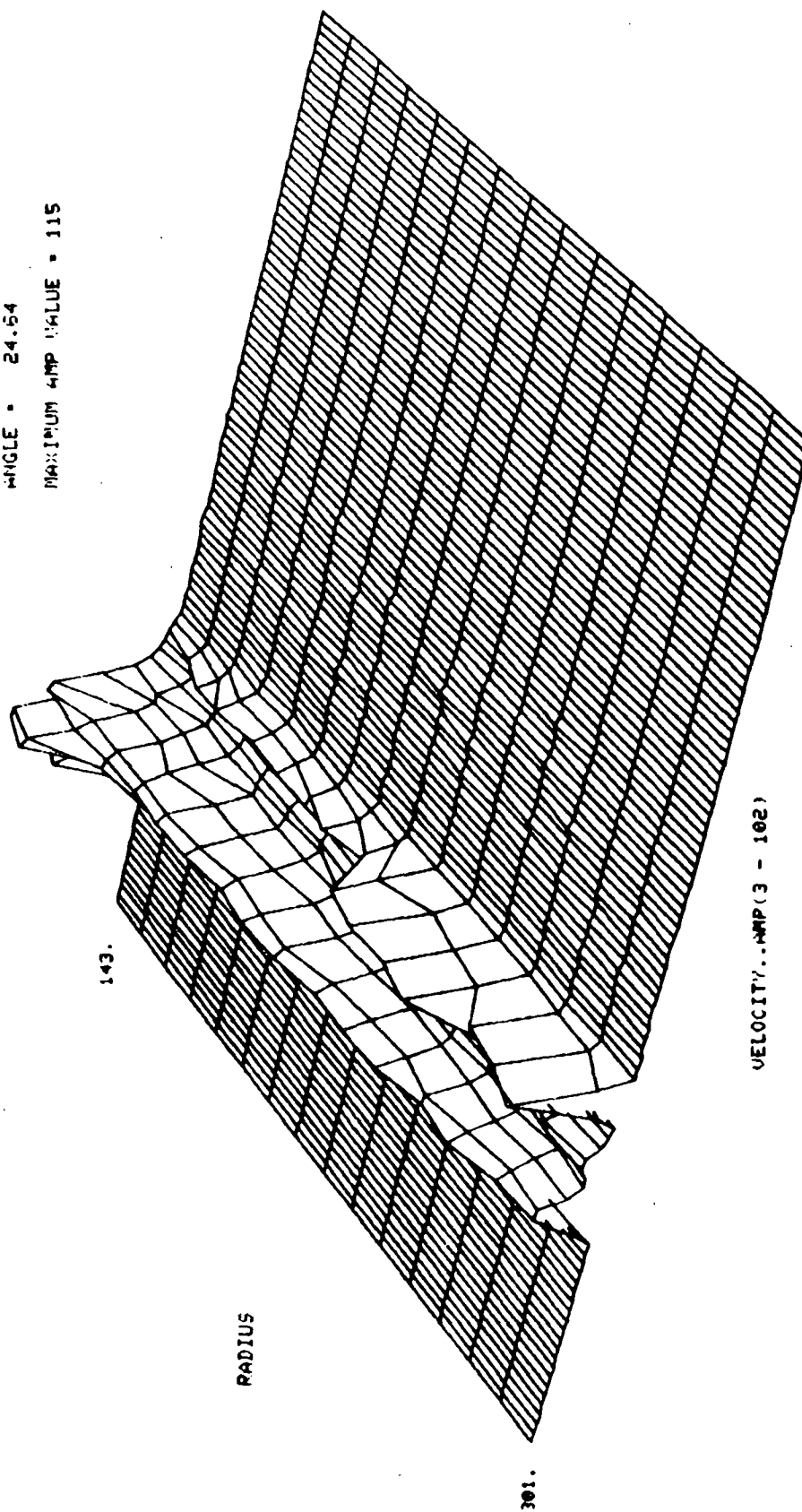
MAXIMUM I - 184.0
AVERAGE I - 14.4

ANGLE
1 9.7
2 10.0
3 10.7
4 11.6
5 12.9
6 14.2
7 15.7
8 17.2
9 18.7
10 20.2
11 21.7
12 23.1
13 24.6
14 26.1
15 27.6
16 29.2
17 30.7
18 32.2
19 33.6
20 35.1
21 36.6
22 38.0
23 39.6
24 41.1
25 42.5
26 43.9
27 45.4
28 46.8
29 48.4
30 49.8
31 51.2
32 52.7
33 54.1
34 55.7
35 57.1
36 58.6
37 60.1
38 61.7
39 63.2
40 64.2

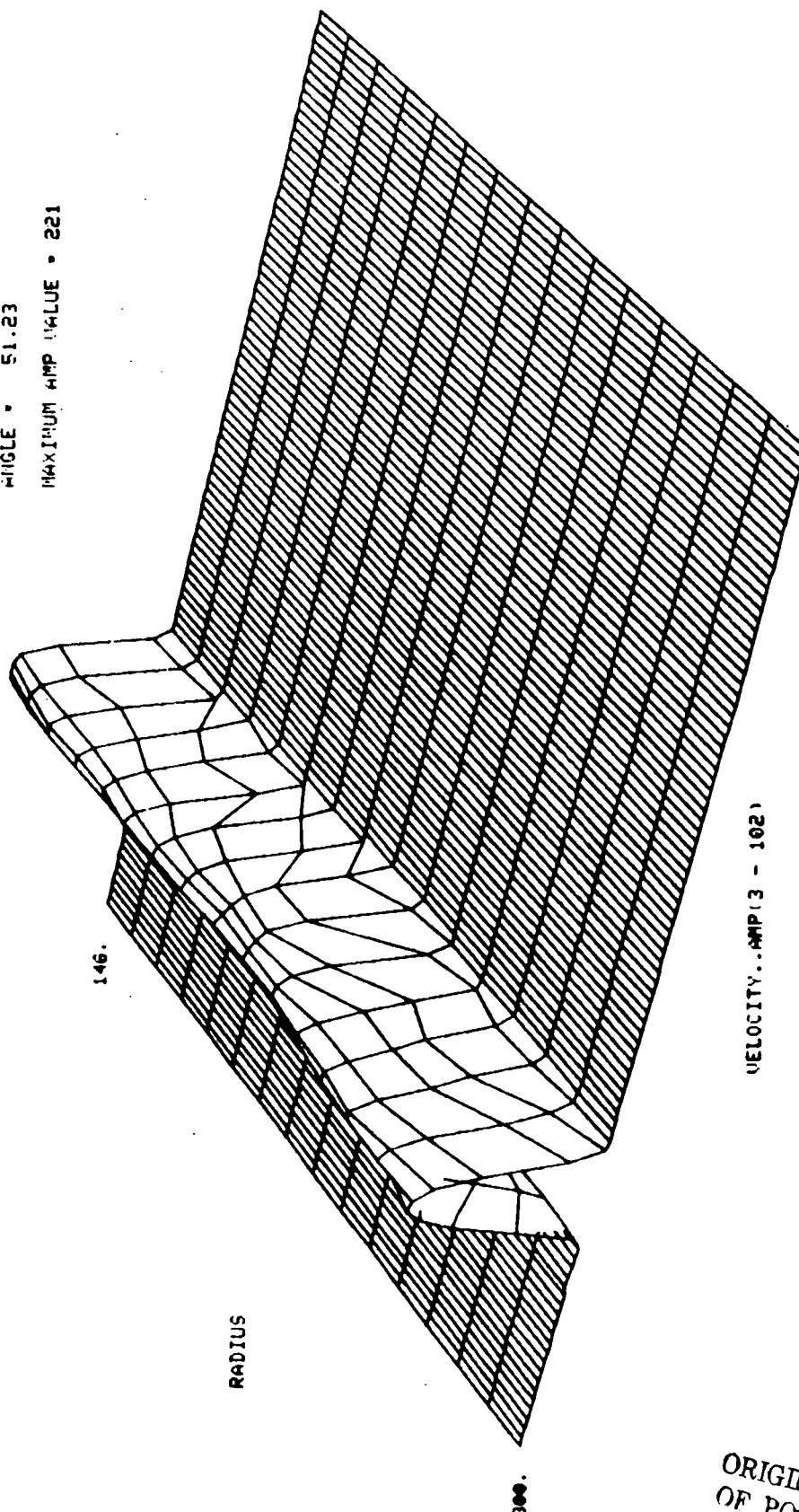


I, R, A DISPLAY AT VELOCITY CELL 34

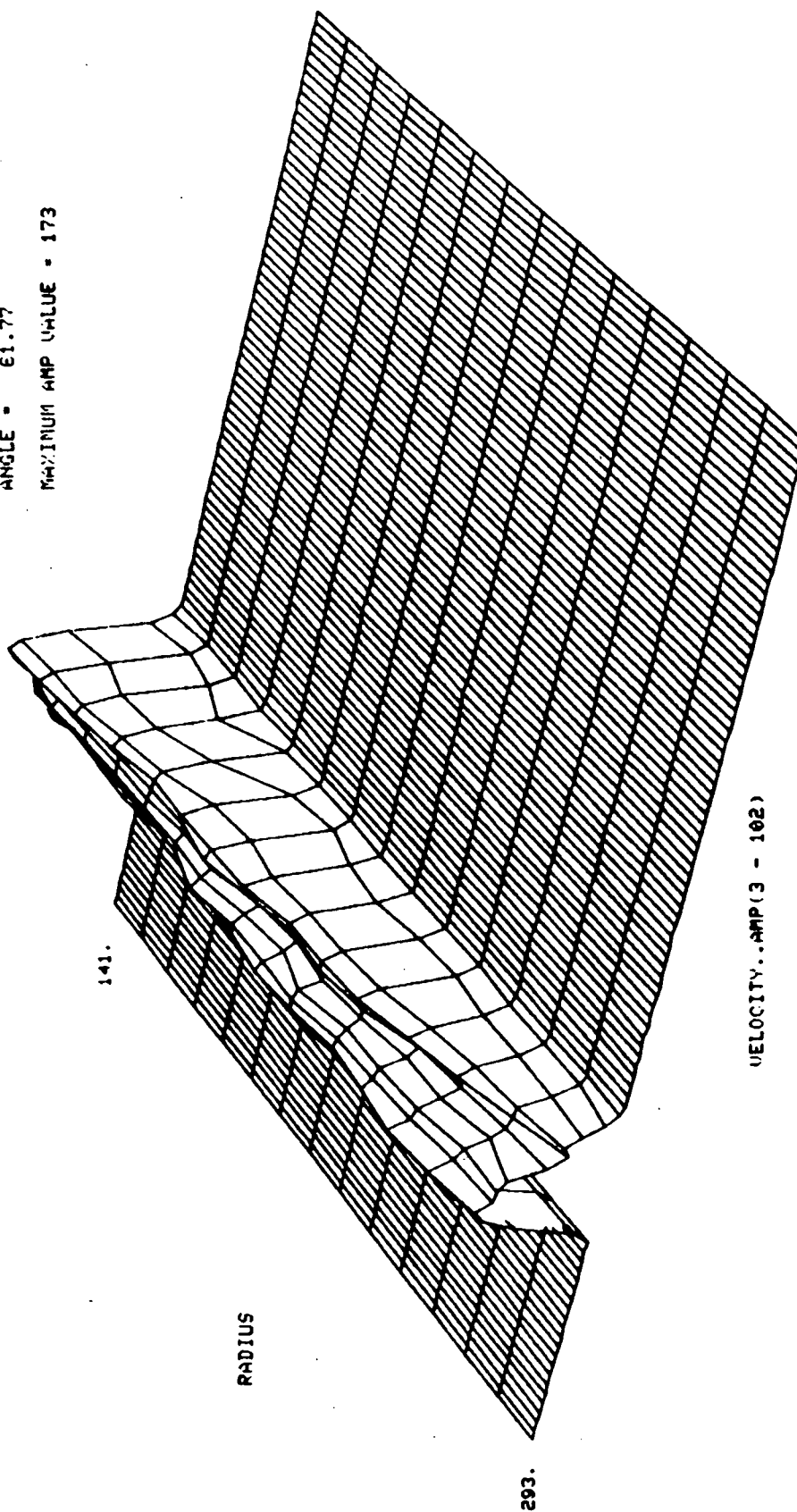
NASA PROJECT DUST DEVIL DAY 235 RUN # 17 TAPE 2 OF 2-22683
SCAM # 29 FRAME # 19540 ANGLE 9.148 TO FRAME # 20155 ANGLE 64.480 CRITICAL AMP AT CELL 34
FRAME # 19727 TO 19743
ANGLE = 24.54
MAXIMUM AMP VALUE = 115



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-22683
SCAN # 29 FRAME # 19540 ANGLE 9.148 TO FRAME # 20150 ANGLE 64.480 CRITICAL AMP AT CELL 34
FRAME # 20009 TO 20025
ANGLE = 51.23
MAXIMUM AMP VALUE = 221



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-23633
 SCAN # 29 FRAME # 19540 ANGLE 9.148 TO FRAME # 20158 ANGLE 64.480 CRITICAL AMP AT CELL 34
 FRAME # 20119 TO 20134
 ANGLE = 61.77
 MAXIMUM AMP VALUE = 173



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 29 FRAME # 19540 ANGLE 9.149 TO FRAME # 20153 ANGLE 64.480 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 41.0
 AVERAGE U - 28.0



ANGLE	U
1	9.7
2	10.0
3	10.7
4	11.6
5	12.9
6	14.2
7	15.7
8	17.2
9	18.7
10	20.2
11	21.7
12	23.1
13	24.6
14	26.1
15	27.6
16	29.2
17	30.7
18	32.2
19	33.6
20	35.1
21	36.6
22	38.0
23	39.6
24	41.1
25	42.5
26	43.9
27	45.4
28	46.8
29	48.4
30	49.8
31	51.2
32	52.7
33	54.1
34	55.7
35	57.1
36	58.6
37	60.1
38	61.7
39	63.2
40	64.2

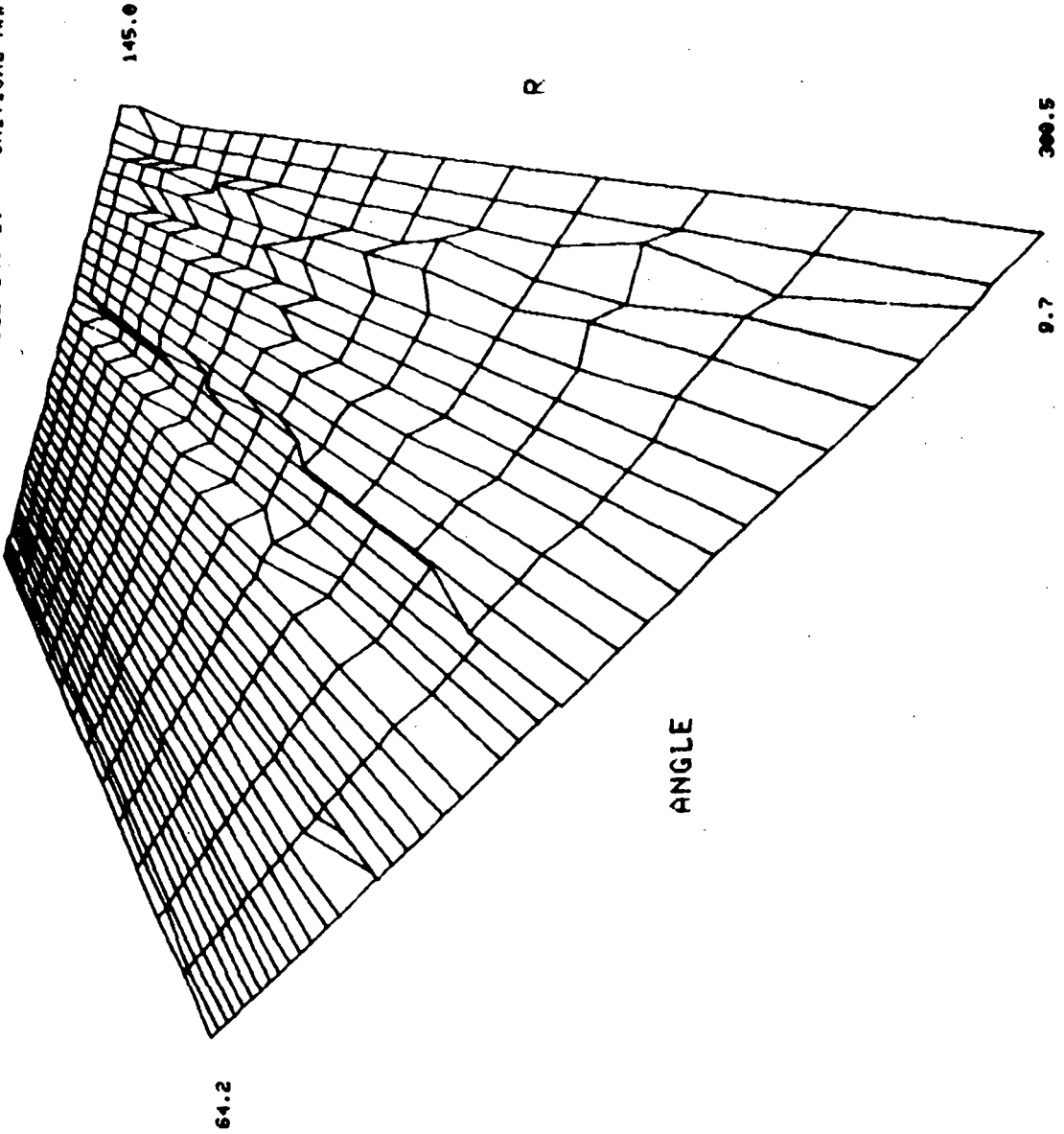
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U, R, A DISPLAY (VELOCITY AT I MAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 29 FRAME # 19540 ANGLE 9.143 TO FRAME # 20155 ANGLE 64.430 CRITICAL AMP AT CELL 34
 OPTION # 22

MAXIMUM U - 39.0
 AVERAGE U - 24.1

- R
- 1 145.0
 - 2 155.4
 - 3 165.7
 - 4 176.1
 - 5 186.5
 - 6 196.9
 - 7 207.2
 - 8 217.6
 - 9 228.0
 - 10 238.3
 - 11 248.7
 - 12 259.1
 - 13 269.4
 - 14 279.8
 - 15 300.5

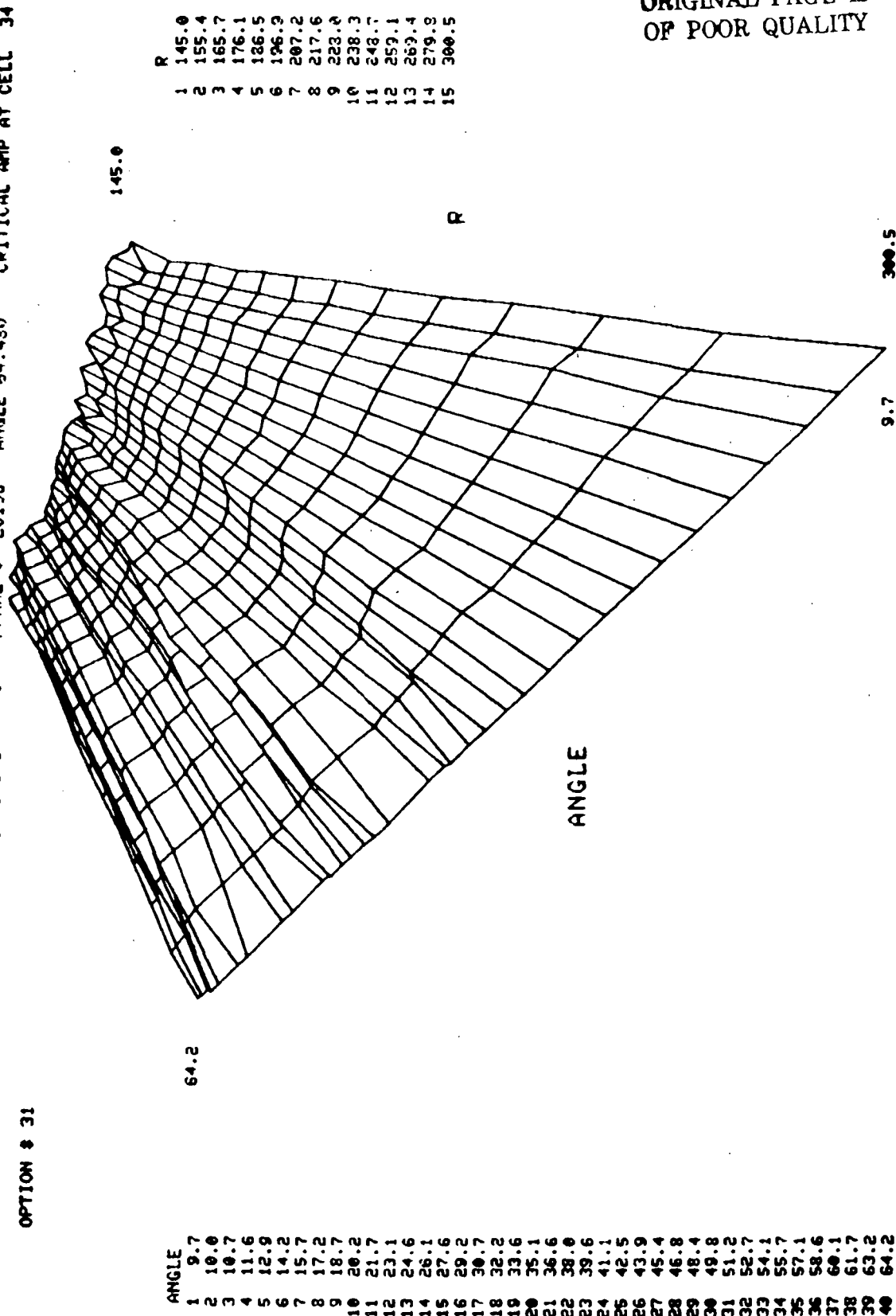


- ANGLE
- 1 9.7
 - 2 10.0
 - 3 10.7
 - 4 11.6
 - 5 12.9
 - 6 14.2
 - 7 15.7
 - 8 17.2
 - 9 18.7
 - 10 20.2
 - 11 21.7
 - 12 23.1
 - 13 24.6
 - 14 26.1
 - 15 27.6
 - 16 29.2
 - 17 30.7
 - 18 32.2
 - 19 33.6
 - 20 35.1
 - 21 36.6
 - 22 38.0
 - 23 39.6
 - 24 41.1
 - 25 42.5
 - 26 43.9
 - 27 45.4
 - 28 46.8
 - 29 48.4
 - 30 49.8
 - 31 51.2
 - 32 52.7
 - 33 54.1
 - 34 55.7
 - 35 57.1
 - 36 58.6
 - 37 60.1
 - 38 61.7
 - 39 63.2
 - 40 64.2

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U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT 1 - 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 29 FRAME # 19540 ANGLE 9.143 TO FRAME # 20158 ANGLE 64.430 CRITICAL AMP AT CELL 34
 OPTION # 31



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U * Imax, R, A DISPLAY

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 SCAN # 30 FRAME # 20158 ANGLE 64.480 TO FRAME # 20793 ANGLE 9.372 CRITICAL AMP AT CELL 34

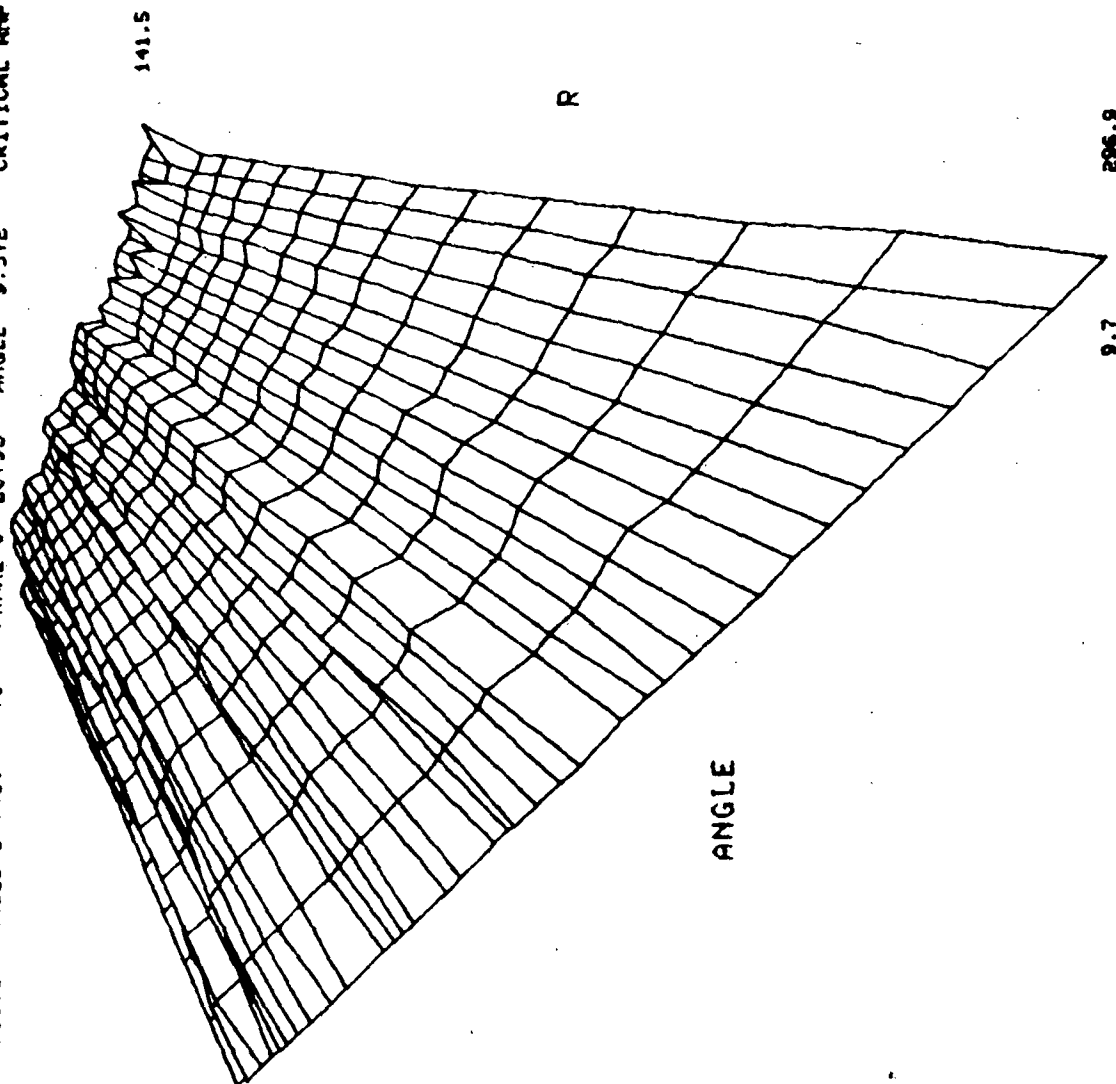
OPTION # 11

MAXIMUM I - 221.0

AVERAGE I - 130.8

ANGLE
 1 64.2
 2 64.3
 3 64.0
 4 63.2
 5 62.3
 6 61.0
 7 59.6
 8 58.1
 9 56.6
 10 55.0
 11 53.6
 12 52.1
 13 50.7
 14 49.2
 15 47.7
 16 46.2
 17 44.8
 18 43.3
 19 41.9
 20 40.5
 21 38.9
 22 37.4
 23 35.9
 24 34.5
 25 33.0
 26 31.5
 27 30.0
 28 28.4
 29 27.0
 30 25.6
 31 24.0
 32 22.5
 33 21.0
 34 19.5
 35 17.9
 36 16.3
 37 14.9
 38 13.3
 39 11.9
 40 10.5
 41 9.7

R
 1 141.5
 2 151.9
 3 162.2
 4 172.6
 5 182.9
 6 193.3
 7 203.7
 8 214.0
 9 224.4
 10 234.7
 11 245.1
 12 255.4
 13 265.8
 14 276.1
 15 286.9



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Imax, R, A DISPLAY

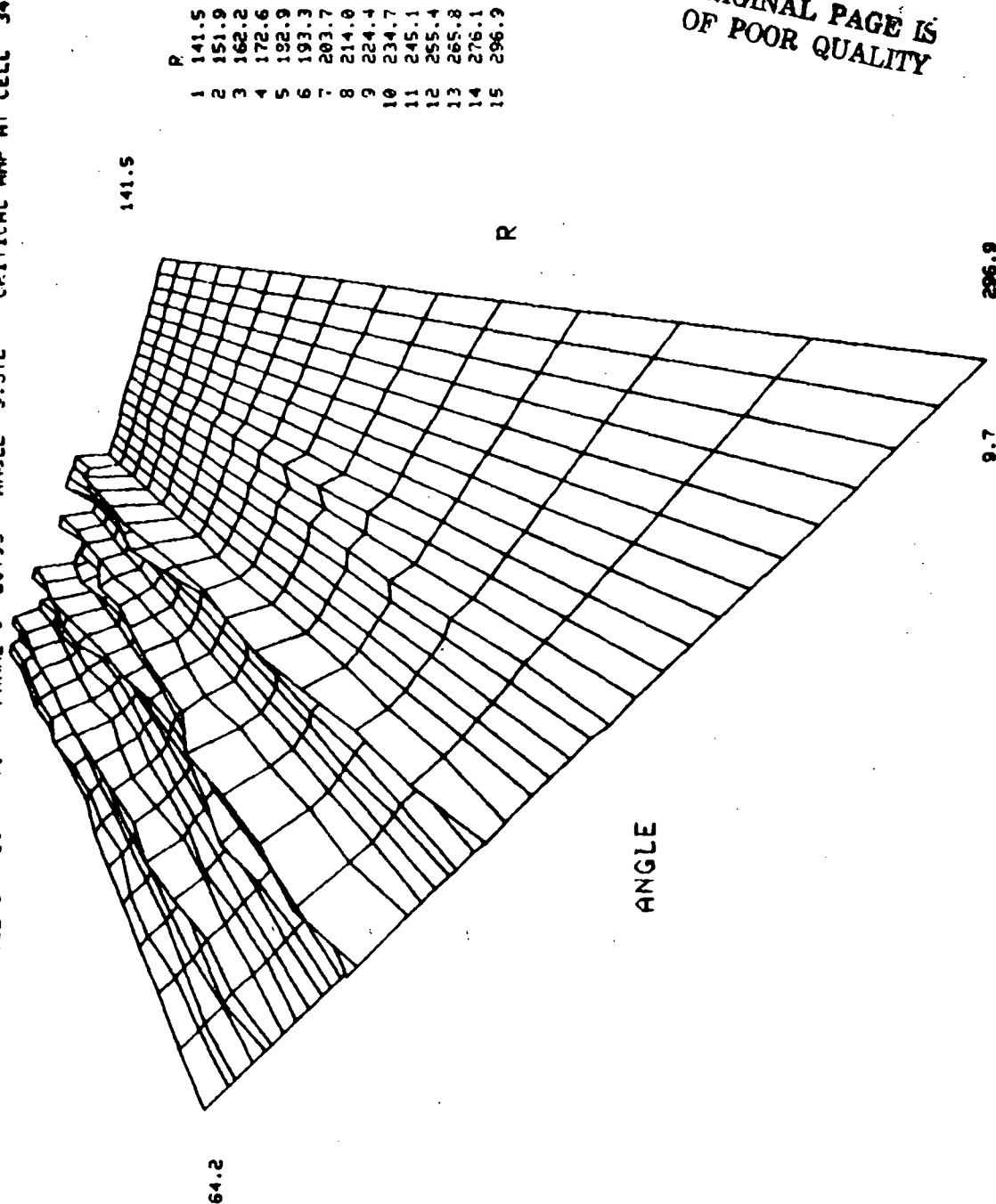
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 FRAME # 20158 ANGLE 64.480 TO FRAME # 20793 ANGLE 9.372 CRITICAL AMP AT CELL 34

OPTION # 12

MAXIMUM I - 155.0

AVERAGE I - 29.6

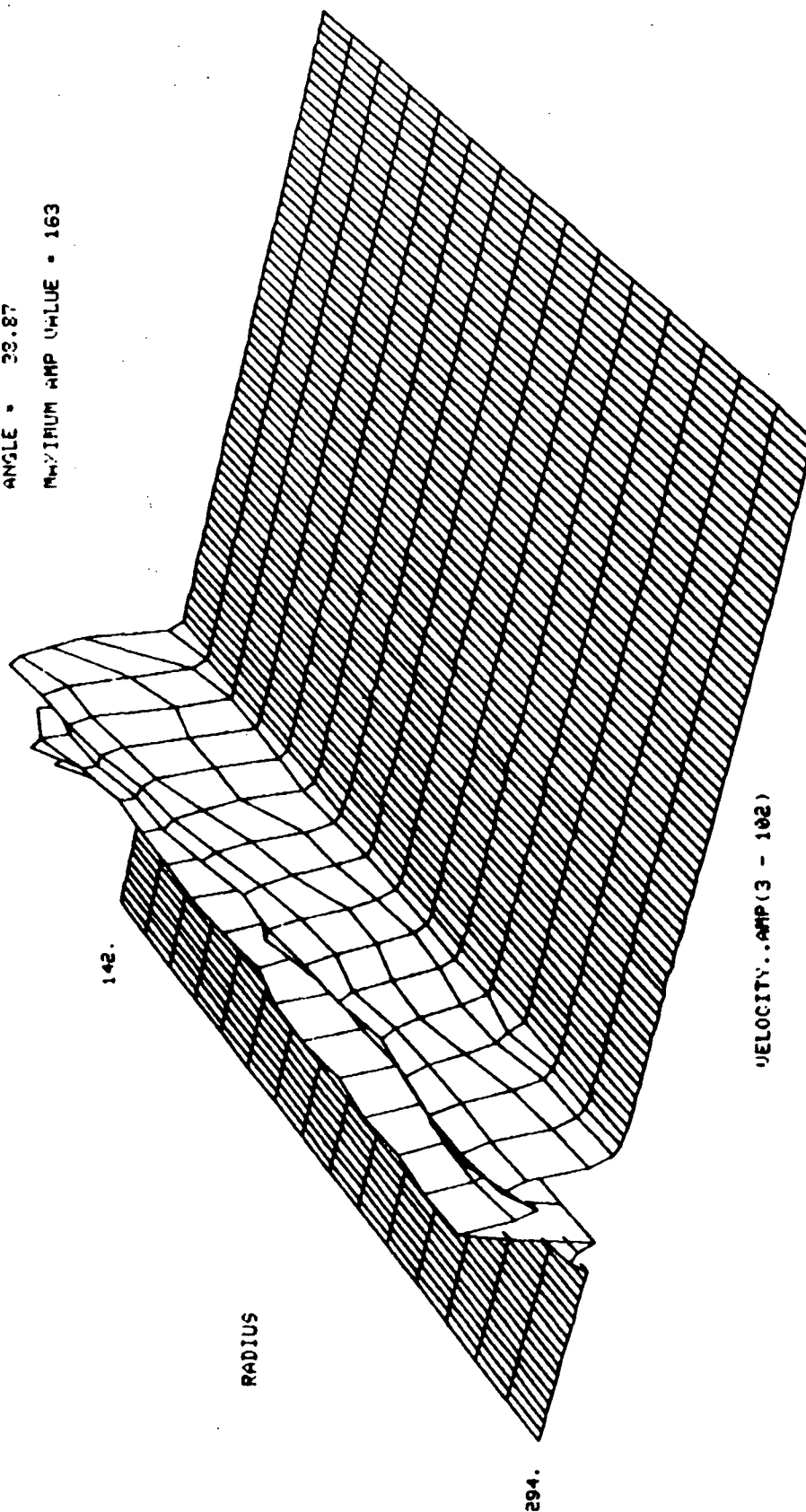
ANGLE
 1 64.2
 2 64.3
 3 64.0
 4 63.2
 5 62.3
 6 61.0
 7 59.6
 8 58.1
 9 56.6
 10 55.0
 11 53.6
 12 52.1
 13 50.7
 14 49.2
 15 47.7
 16 46.2
 17 44.8
 18 43.3
 19 41.9
 20 40.5
 21 38.9
 22 37.4
 23 35.9
 24 34.5
 25 33.0
 26 31.5
 27 30.0
 28 28.4
 29 27.0
 30 25.6
 31 24.0
 32 22.5
 33 21.0
 34 19.5
 35 17.9
 36 16.3
 37 14.9
 38 13.3
 39 11.9
 40 10.5
 41 9.7



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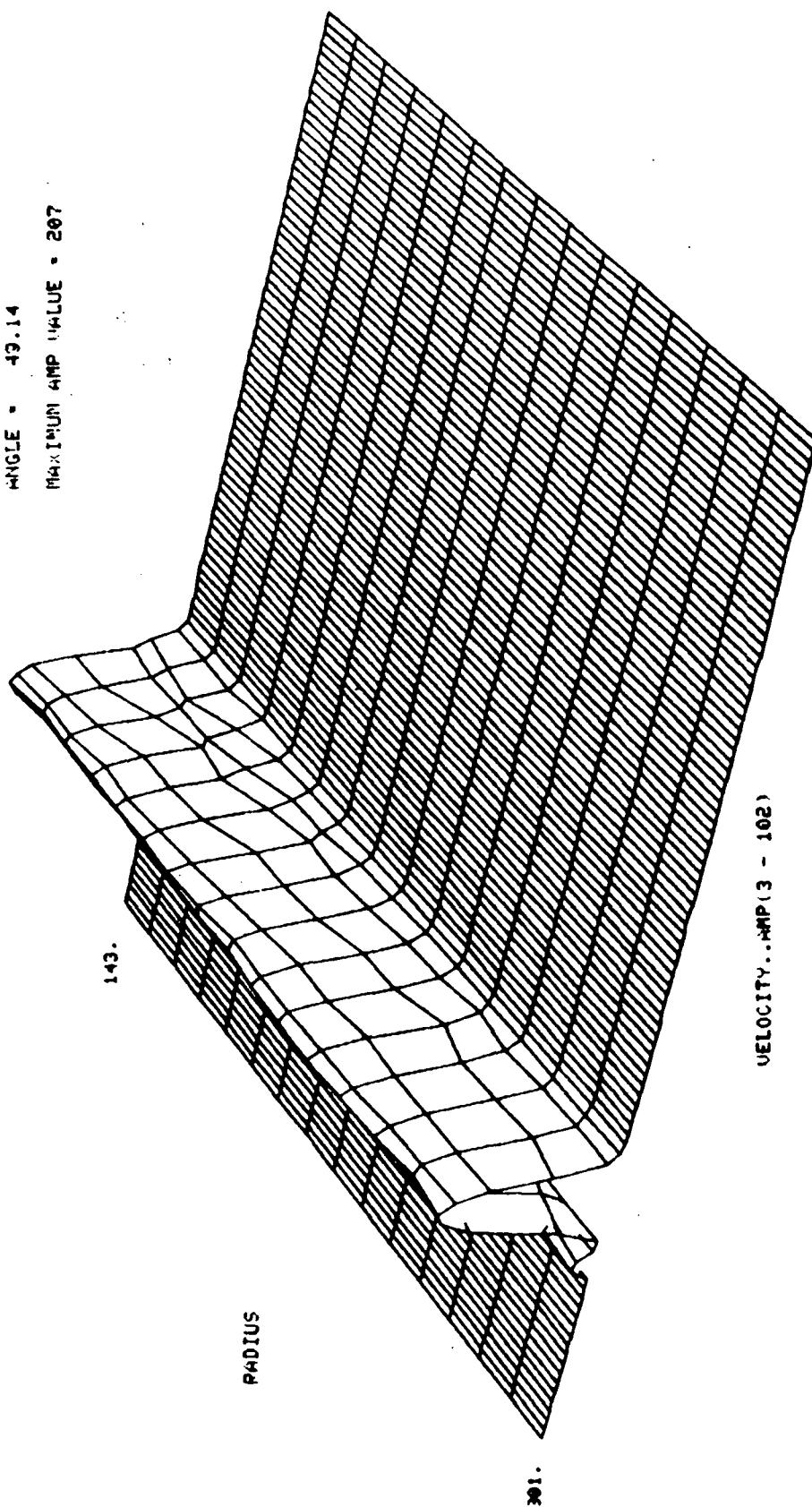
I, R, A DISPLAY AT VELOCITY CELL 34

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28633
SCAN # 30 FRAME # 20152 ANGLE 64.480 TO FRAME # 20733 ANGLE 9.372 CRITICAL AMP AT CELL 34
FRAME # 20463 TO 20479
ANGLE = 33.87
MAXIMUM AMP VALUE = 163

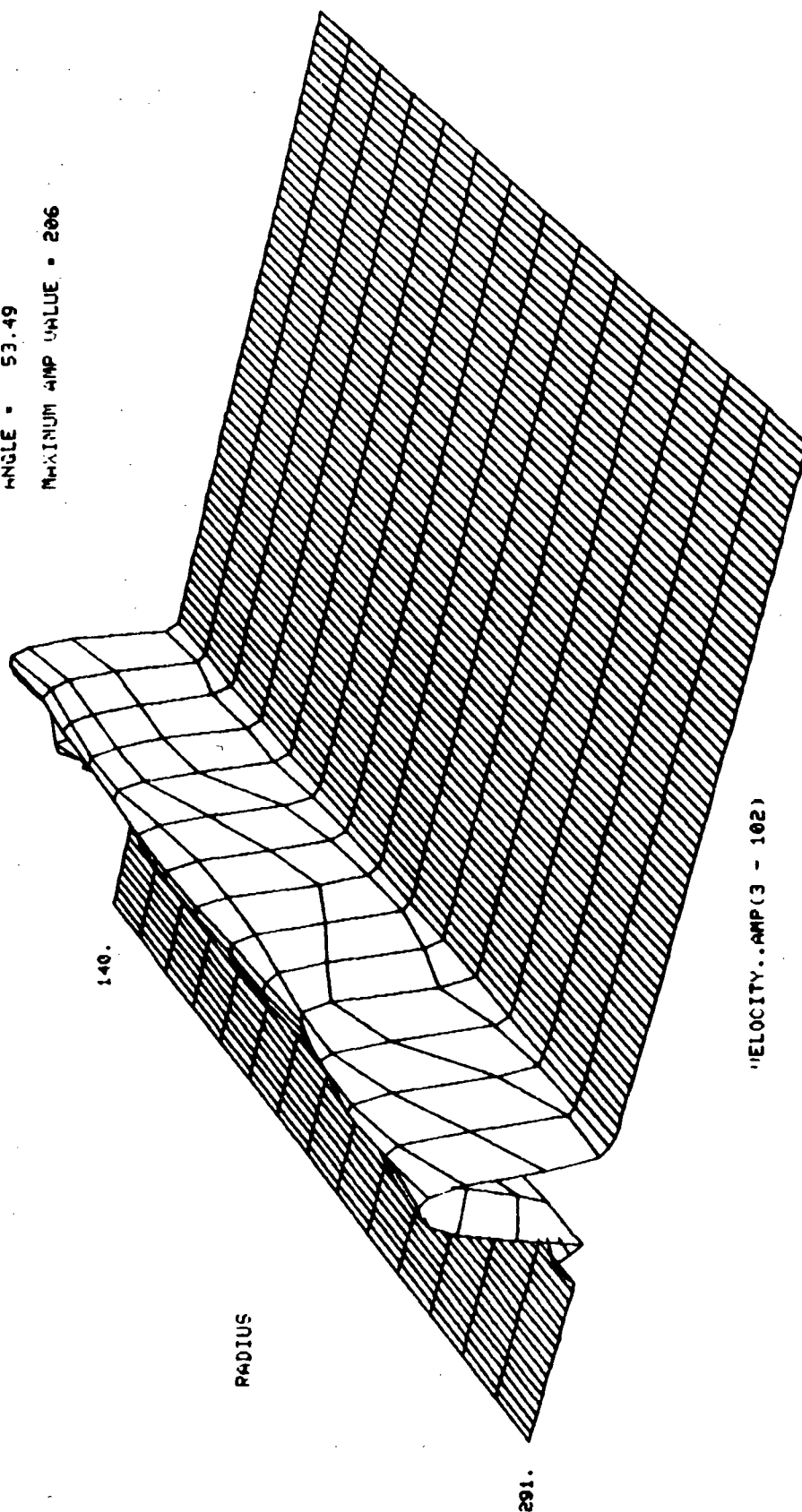


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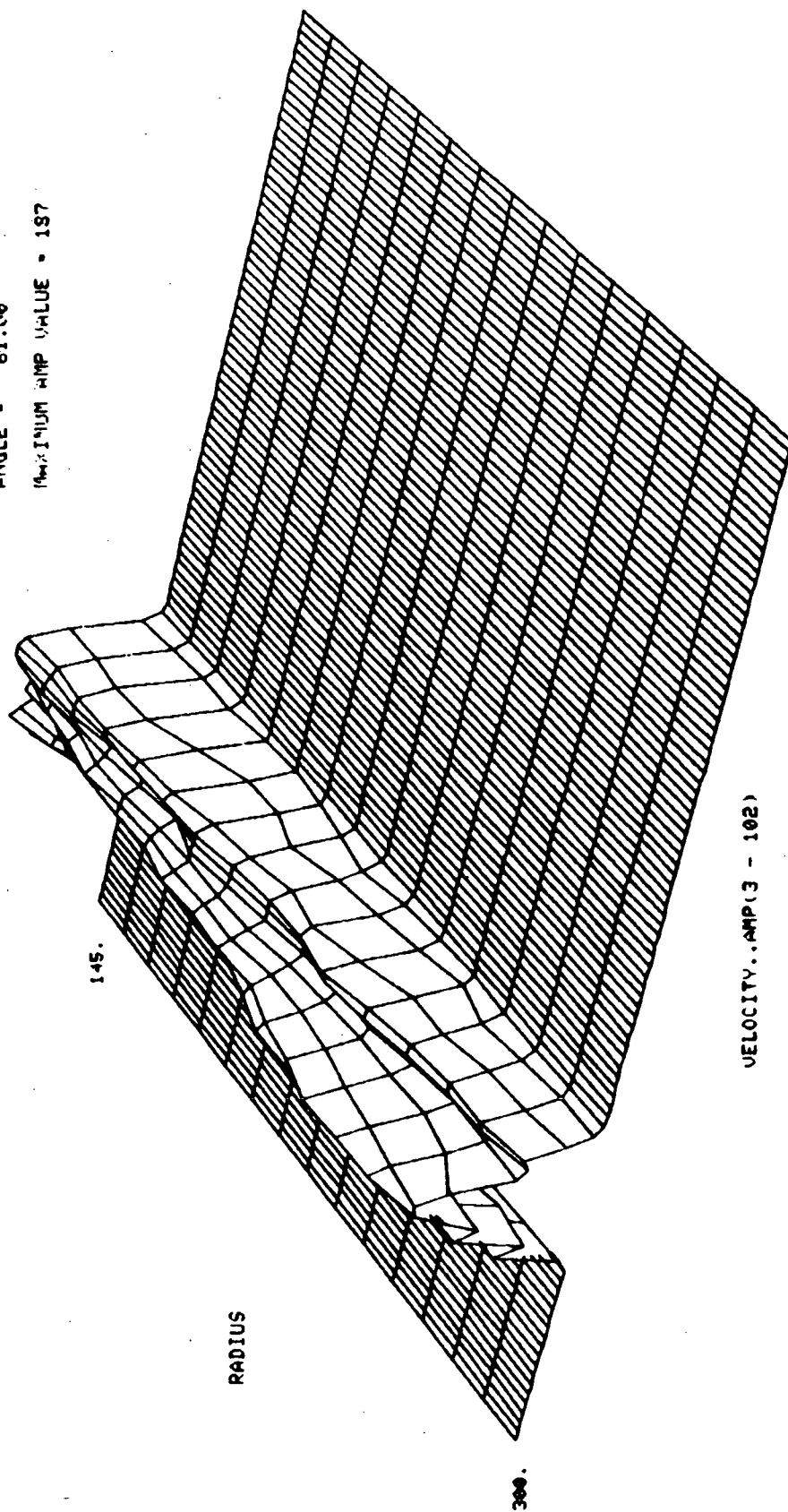
NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-22583
 SCAN # 30 FRAME # 20158 ANGLE 64.480 TO FRAME # 20793 ANGLE 9.372 CRITICAL AMP AT CELL 34
 FRAME # 20353 TO 20369
 ANGLE - 49.14
 MAXIMUM AMP VALUE - 207



NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-23683
SCNN # 30 FRAME # 20158 ANGLE 64.480 TO FRAME # 20793 ANGLE 9.372 CRITICAL AMP AT CELL 34
FRAME # 20307 TO 20322
ANGLE = 53.49
MAXIMUM AMP VALUE = 206



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 NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-22683
 SCAN # 30 FRAME # 20158 ANGLE 64.480 TO FRAME # 20793 ANGLE 9.372 CRITICAL AMP AT CELL 34
 FRAME # 20228 TO 20244
 ANGLE = 61.00
 MAXIMUM AMP VALUE = 197



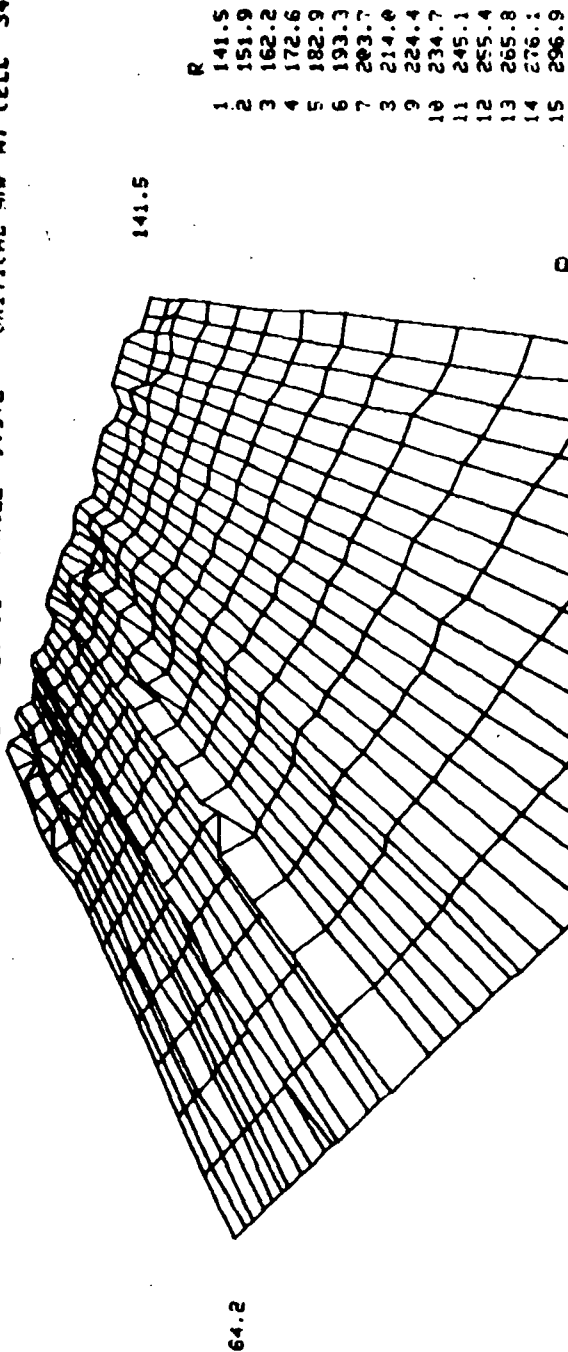
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NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28693
 SCAN # 30 FRAME # 20158 ANGLE 64.490 TO FRAME # 20733 ANGLE 9.372 CRITICAL AMP AT CELL 34

OPTION # 21

MAXIMUM U - 36.0
 AVERAGE U - 28.0

ANGLE
 1 64.2
 2 64.3
 3 64.0
 4 63.2
 5 62.3
 6 61.0
 7 59.6
 8 58.1
 9 56.6
 10 55.0
 11 53.6
 12 52.1
 13 50.7
 14 49.2
 15 47.7
 16 46.2
 17 44.8
 18 43.3
 19 41.9
 20 40.5
 21 38.9
 22 37.4
 23 35.9
 24 34.5
 25 33.0
 26 31.5
 27 30.0
 28 28.4
 29 27.0
 30 25.6
 31 24.0
 32 22.5
 33 21.0
 34 19.5
 35 17.9
 36 16.3
 37 14.9
 38 13.3
 39 11.9
 40 10.5
 41 9.7



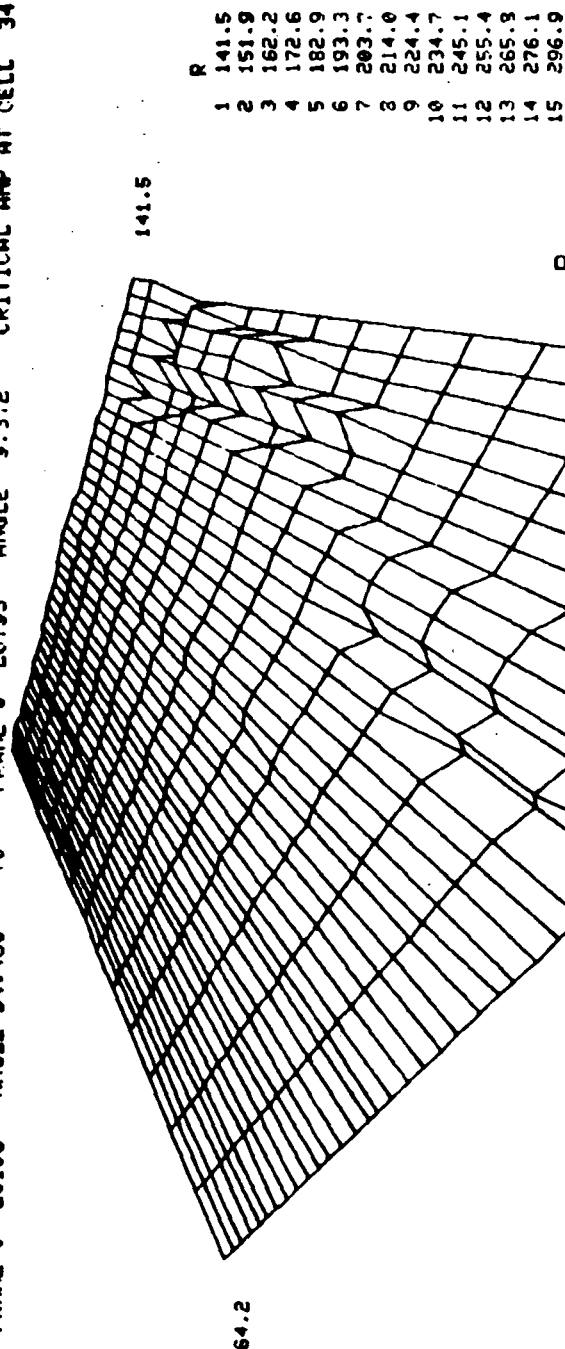
U, R, A DISPLAY (VELOCITY AT I MAX)

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
 * SCAN # 30 FRAME # 20158 ANGLE 64.480 TO FRAME # 20793 ANGLE 3.372 CRITICAL WWP AT CELL 34

OPTION # 22

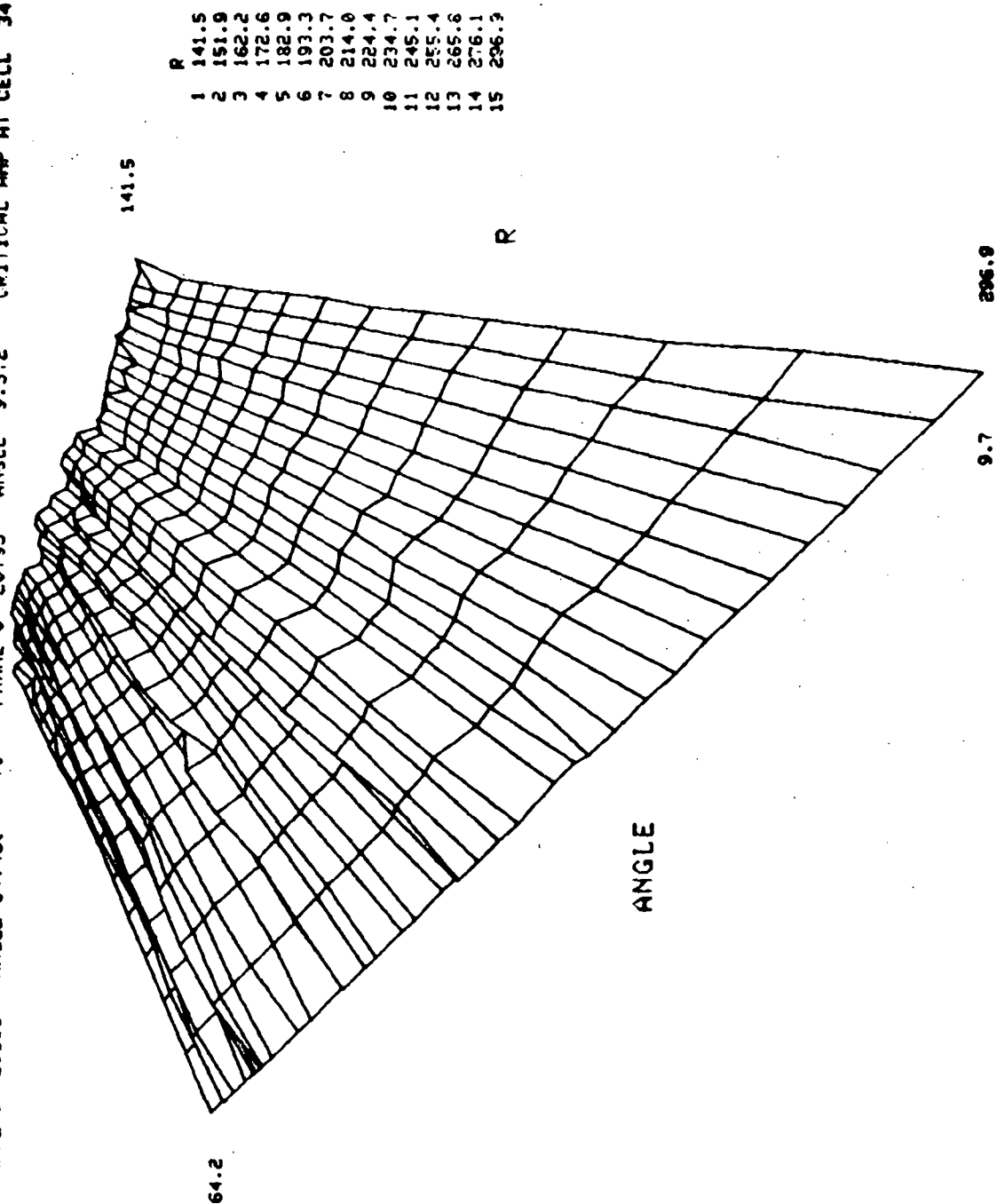
MAXIMUM U - 37.0
 AVERAGE U - 27.1

ANGLE
 1 64.2
 2 64.3
 3 64.0
 4 63.2
 5 62.3
 6 61.0
 7 59.6
 8 58.1
 9 56.6
 10 55.0
 11 53.6
 12 52.1
 13 50.7
 14 49.2
 15 47.7
 16 46.2
 17 44.8
 18 43.3
 19 41.9
 20 40.5
 21 38.9
 22 37.4
 23 35.9
 24 34.5
 25 33.0
 26 31.5
 27 30.0
 28 28.4
 29 27.0
 30 25.6
 31 24.0
 32 22.5
 33 21.0
 34 19.5
 35 17.9
 36 16.3
 37 14.8
 38 13.3
 39 11.9
 40 10.5
 41 9.7



U_{MAX}, R, A DISPLAY AMPLITUDE THRESHOLD AT 1 - 70

NASA PROJECT DUST DEVIL DAY 236 RUN # 17 TAPE 2 OF 2-28683
SCAN # 30 FRAME # 20158 ANGLE 64.480 TO FRAME # 20793 ANGLE 9.372 CRITICAL AMP AT CELL 34
OPTION # 31



U * I_{max}, R, A DISPLAY

ANGLE
1 64.2
2 64.3
3 64.0
4 63.2
5 62.3
6 61.0
7 59.6
8 58.1
9 56.6
10 55.0
11 53.6
12 52.1
13 50.7
14 49.2
15 47.7
16 46.2
17 44.8
18 43.3
19 41.9
20 40.5
21 38.9
22 37.4
23 35.9
24 34.5
25 33.0
26 31.5
27 30.0
28 28.4
29 27.0
30 25.6
31 24.0
32 22.5
33 21.0
34 19.5
35 17.9
36 16.3
37 14.9
38 13.3
39 11.9
40 10.5
41 9.7